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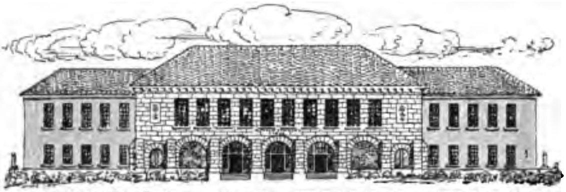
Ornamental Shrubs Of the United States



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ORNAMENTAL SHRUBS
OF THE UNITED STATES

(HARDY, CULTIVATED)

BY

AUSTIN CRAIG APGAR

AUTHOR OF "TREES OF THE NORTHERN UNITED STATES"
"BIRDS OF THE UNITED STATES," ETC.

NEW YORK ·:· CINCINNATI ·:· CHICAGO
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APGAR'S ORNAMENTAL SHRUBS.
W. P. I

PREFACE

THIS book is intended to be used by that large public who wish to know by name the attractive shrubs cultivated in parks and private grounds, but who are actually afraid of anything called botany. This fear comes from the great number of scientific words used and the constantly changing names in botanic books. We cannot help using rose, spirea, hydrangea, chrysanthemum, azalea, and rhododendron, though they are scientific, because long use has rendered them familiar. It would be well for us if we could lose our fear of old, well-given names in other cases.

The authority of the great Linnæus has not in one hundred and fifty years prevailed upon us to call syringa bushes philadelphus or lilac bushes syringa, so it is foolish for us to try to change old names. The names by long use are the ones which will endure; and if our scientific nomenclature is to be constantly changing, the result will be that the public will have nothing to do with any names but common ones. There was a time when we said, and with some truth, that common names were only local — that there were too many of them applied to the same plant and too many different plants with the same name. Ninebark and Virginia creeper are almost universally used common names; let some of us try to find and remember the scientific names given in the different manuals printed in the twentieth century for these plants!

There ought to be a time limit after which names used should not be changed for any "rule," — names which have generally found their way into manuals and catalogues for, say, twenty years should remain the names for all time. Newly introduced plants belonging to new genera should have distinctive names for our country, but the old names used in their native country would be generally best for our use.

The largest, latest, and best work on ornamental plants in America is Bailey's "Cyclopedia of Horticulture," and the names there given are in almost all cases the ones here used. Where changes occur to suit popular usage the interchangeable names will be found near each other, as this book is not alphabetic but by families; thus, Weigela and Diervilla are on the same page and not in separate volumes, as in the "Cyclopedia."

To suit an almost universal demand, practically all plants have been given common names. There is an attempt in many cases to use good generic names as a part of the name.

As all bushes in general cultivation outdoors for ornament throughout the United States are included, many conservatory plants of the North will be found because they are hardy South.

The illustrations are more numerous than ever before given in a single book on shrubs. Nearly every species has some feature shown. In order to impress the pupil with what constitutes a whole leaf, one is detached on some portion of the plant in most figures.

The charm of a landscape throughout the growing season lies mainly in the foliage; and the contrasts plants show are mostly in the variation in the color, parts, and forms of the leaves. The flowers are evanescent, but the leaves endure. Lovers of nature should get the habit of noticing leaf differences, and this book is written in the hope that it will aid in forming this habit.

Many of us are afraid of anything looking like a key. Keys in manuals have gradually been rendered more and more difficult by the introduction of a larger and larger number of scientific words applying in many cases to microscopic features; intelligent ones among us with an average amount of interest will not attempt to use them. The keys here given were written for the general public and not at all for the scientist. The attempt is made to include only common English words with their ordinary application. When a feature of a plant has no English word to describe it, an illustration or a phrase shows what is meant.

The beginner may, of course, use only Part III with the illustrations to help him find the name of the shrub; but it would be better to throw fear to the dogs and read intelligently Part I and thus learn what is a leaf and the great leaf differences and what is a flower and the great flower differences. Then boldly try the keys to Part II and discover how readily they can be used. By means of these keys the page is determined in Part III where the plant is figured and described. Persevere! Do not be discouraged by a failure or two. If you reach that stage when you know the leaf of a plant, all the rest will be found plain and easy.

The author has received much valuable help from many sources, and his thanks are especially due to nurserymen North, South, East, and West who have furnished him with specimens for illustration and information of great value; without their help the book could not have been written. The authorities of the Arnold Arboretum and of other botanic gardens of the country have given help freely when called upon.

Austin C. Apgar.

TRENTON, NEW JERSEY.

EDITOR'S NOTE

My father completed the writing of this last book of his shortly before his death. It had become familiar to me through copying his manuscript and in the trips we took together to various nurseries and forest lands to test the working power of his book. As a natural outcome of this long and close association with him, the editing of it has devolved upon me. He made the illustrations in pencil, almost entirely from nature, and I have since inked them in, at the request of the publishers.

Grateful acknowledgments are due to a number of my father's colleagues and friends for their assistance and offers of help, and particularly to Professor John W. Harshberger of the University of Pennsylvania, who has given a last critical reading to the manuscript and the proof sheets and has prepared the glossary and the index.

ADA APGAR DRAYCOTT.

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ORNAMENTAL SHRUBS

PROPAGATION OF PLANTS[1]

AT the end of each group of plants the methods of propagation are given. A few words may be necessary to explain the terms used. The order in which the terms are placed indicates the ease and success of the different plans, the best method having precedence. Of course the best method in some localities and under certain conditions might not be the best for other localities under other conditions, so some allowance must be made.

Seeds. — The use of seeds is generally nature's plan, but it has some disadvantages. Varieties do not come true in most cases. The seeds need to be fully mature but still fresh. Many seeds are slow to grow; certain kinds need years to sprout. A number of flowers, double ones, for example, do not produce seeds.

As a general rule, seeds should be soaked in warm water overnight before planting. The seedlings are best raised in shallow boxes or, after frosts are over in spring, in open ground. Small seeds should be covered with fine loam only to a depth but little greater than the diameter of the seed; large seeds, to the depth of a quarter of an inch or more. A good rule is to cover any seed to a depth of twice its diameter with light fine earth. After covering the seeds the soil should be pressed down firmly with a board. Seedlings must not be allowed to become dry at any time.

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[1] Everything is condensed in this book to reduce it to handbook size, and the treatment of this topic is necessarily brief. The best book known to the author for an amateur is "Practical Floriculture," by Peter Henderson ($1.50).

Twig Cuttings. — For almost all shrubs, the ripened instead of the soft-growing wood should be taken, and pieces with three or four eyes, axillary buds. Imbed about two eyes, removing all the leaves from the imbedded portion. If the plant has large leaves, cut off also part of the exposed leaves to reduce the leaf surface so as not to exhaust the life of the rooting twig. The best season for the propagation of slips is September to January, after the hottest season. Of course I do not here give methods used by florists by which they obtain the largest possible number of plants from the smallest amount of material. They have hothouses, cold frames, and other appliances. This method is for the amateur to obtain a few new plants.

Root Cuttings. — All plants below ground are popularly called roots, though many herbs and some shrubs have rootstocks, or underground stems, that have buds or eyes which will readily produce new plants. When any portion below ground can be cut into pieces and planted in soil as a method of propagation, the term "root cuttings" is used. Pieces one to three inches long are taken, slightly imbedded, and allowed to grow.

Suckers. — Many species naturally send up stems from below ground at some distance from the main plant, and these stems are called suckers. These, after they get a full start, can be separated and made to produce new plants. Trees or shrubs which readily sucker are, as a rule, undesirable because they cannot be kept within bounds. Many plants of great beauty are discarded on account of this tendency.

Layers. — Nearly all plants can be increased in number by layering. Some, by the most experienced nurserymen, can be propagated in no other way. By this plan a twig is bent down to the ground, where it is covered with soil and kept down by a weight or by sticks until it takes root. Before imbedding, a slanting cut on the upper side is made with a sharp knife, half severing the twig; this helps the formation of roots and also the twig's removal when rooted. For layers, young wood is taken and three or four leaves and buds are exposed beyond the imbedded portion. The best time for layering is from the middle of June to September.

Divisions. — Many shrubs are increased by the division of the whole clump into two or more portions, each being set out into new ground. The best season for this purpose is the fall, and this is especially true of those plants having fleshy roots, as the pæonies.

Grafting and Budding. — Plants which are half hardy in any region are rendered more hardy by grafting them on roots of nearly related but hardier species. Low spreading plants are sometimes grafted on erect-growing forms at the height of five to eight feet to produce umbrella or weeping trees. The so-called Kilmarnock willow, the weeping mulberry, and the Catalpa Bungei are produced in this way. Peculiar sports can be propagated only by budding or grafting. Beginners should see these processes performed by an expert before undertaking them ; the processes are easy after the methods are learned. Budding takes the place of grafting with plants of more slender or less woody stems, as roses.

PART I

LEAVES, FLOWERS, AND FRUIT

CHAPTER I

THE STUDY OF LEAVES

What constitutes a Leaf. — In order to use this book with ease and success it will first be necessary to learn what constitutes a leaf of a plant. The reader must be able to pick off *a whole leaf and nothing but a leaf* from any shrub. Leaves are present on plants through the growing season, and they are the only portions besides the stems on which they grow which are always to be found. The flowers are short-lived on all plants, and the fruits are in only comparatively few species to be found through the year.

In looking on a group of shrubs of hundreds of species, a small number, a dozen or less, will be found in bloom at any given time. The great and lasting beauty of these plants is their foliage. The differences which the species show are easily seen in the forms and the surface of the blades of the leaves. So if the reader wants to become acquainted with plants, he must recognize their leaves.

We all know many things by sight which we cannot express in words; but if we wish to use such a book as this to become acquainted with the part of nature with which it deals, we must see how the words used by the author apply to the plant parts under observation. The first and most important step in this knowledge is the ability to determine what constitutes a full leaf.

The visible growing parts of bushes are the stems and

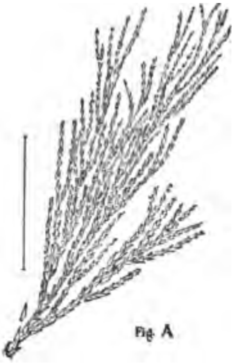


Fig. A

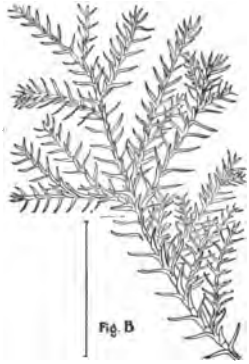


Fig. B

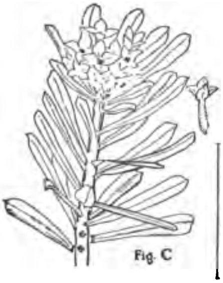


Fig. C

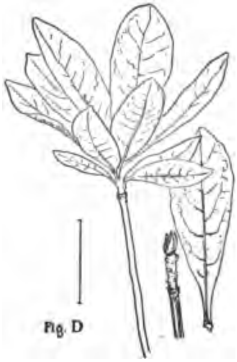


Fig. D

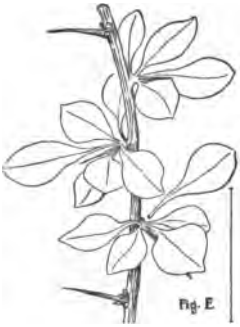


Fig. E

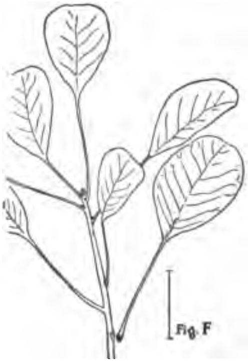


Fig. F

Plate I

the leaves which are regularly arranged along them. The stems are easily seen to be jointed, and the two things which make these joints are the leaves and the buds, just above the stalk of the leaf, in their axils. These buds will sooner or later burst and form new branches or else flowers. The buds are of various sizes, but even if small they can usually be seen, though occasionally they are so hidden partially or wholly under the base of the leaf as to need the breaking off of the leaf to expose them. When the leaves are very numerous, as in the spruces and other such evergreens, only a few of the buds develop so as to be seen.

Now all this is merely words easily read and easily comprehended. If the reader wishes really to make use of this book, he must take the twigs of many kinds of shrubs and search for leaves and buds.

It will be a good plan first to take the illustrations given in this book, to see in each case what is a leaf. One full leaf is drawn by the side of the twig in every figure. The bud in the axil can usually be seen before the removal of the leaf, but more clearly where the leaf is removed. The largest and most complicated leaf is shown in Fig. 336; and the smallest, in Fig. 36. The reader must not think it too simple a task; but it is one necessary to master. A leaf, a whole leaf, and nothing but a leaf must be known in all cases if this book is to be used. When the leaf is surely known, all the other steps are easy. After a close examination of the figures given and an understanding of why the removed portion is a leaf, because it marks the joint of a stem, one should go to the shrubbery and gather branches from a number of kinds of bushes.

Be sure to cut off twigs which have grown extensively during the year. These new growths will have smoother and generally greener bark than the old growth. Having gathered a dozen or more kinds, take them to some shady place where there is a chance to have a good seat and an

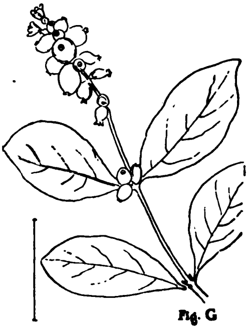


Fig. G

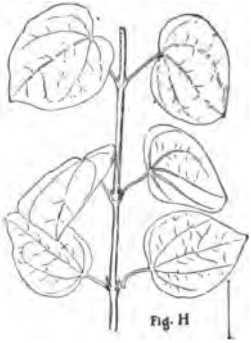


Fig. H

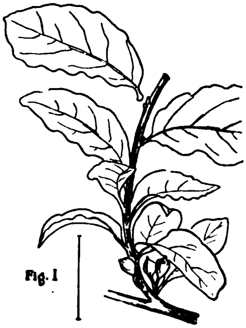


Fig. I

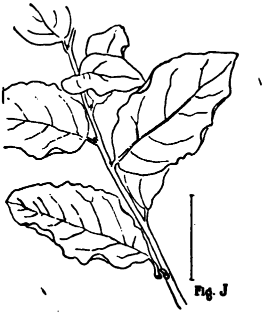


Fig. J

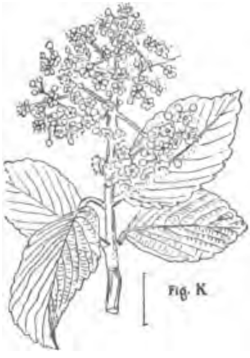


Fig. K

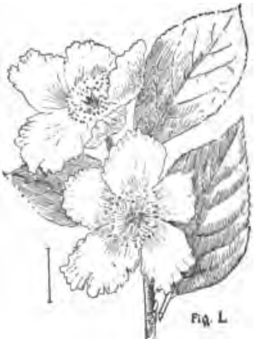


Fig. L

PLATE II

investigating companion. Two heads and two pairs of eyes are found to be much better than one for the study of nature by a beginner.

Of the dozen species probably half will have buds as large and conspicuous as to be easily seen by any one, especially if it is summer time. In these cases the whole leaf is all that is attached to the stem just under or below the bud. Some of these leaves may be very small, less than an inch in length, while others may be a foot or more long. Many leaves will have but one blade or spreading green portion, while others may have any number of blades — a score, a hundred, or possibly a thousand. The leaf of the waxberry (Plate II, Fig. G) has one blade; the clover, three; rose bushes, three, five, or seven (some species have over seven); the elder bushes (Plate III, Fig. P), seven to eleven; some of the sumachs, over twenty-five; and the acacia tree, several hundred (Plate IV, Fig. S).

Having determined about those which have conspicuous buds in the axils of the leaves, take other twigs and, remembering that leaves mark the joints of stems, try to break off whole leaves. In some cases the buds will show after the leaves are stripped off, because they were hidden under their bases (Plate III, Fig. R). A few may have flowers, fruit, or twigs above the leaves; these are the developed buds which could earlier have been found in the unopened state. The final specimen or two may possibly show neither buds nor branches in the axils, as these develop visibly only later in the year.

As was said, the growing parts of plants are the stems with their leaves. Stems are more or less continually growing at their tips; this is especially true in shrubs. But the leaves, no matter how complicated, soon reach their full size and stop growing. The forward growing part is sure to be a plant stem, and the parts which mark it into joints, no matter how small and scale-like they appear, are full leaves. In all parts of the United States

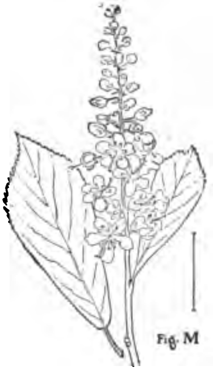


Fig. M

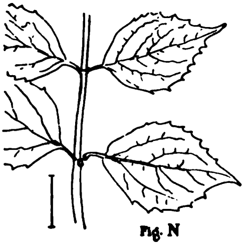


Fig. N

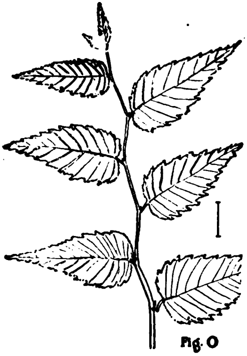


Fig. O

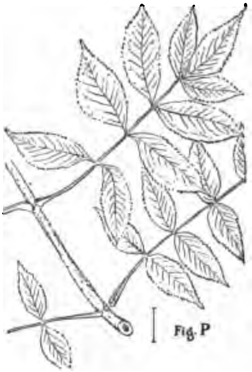


Fig. P

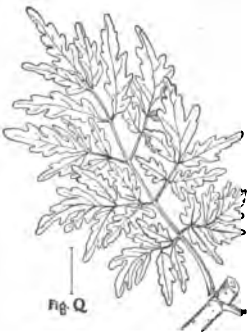


Fig. Q

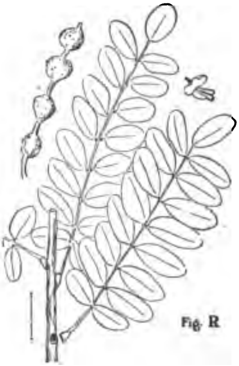


Fig. R

Plate III

there is some tree popularly called red cedar and in all sections some cultivated plant called arborvitæ. If a specimen of either of these is taken, the growing twigs will be found covered with scale-like parts and no such things as would usually be called leaves. Each of these scales, because it marks a joint, is a full leaf of the plant (Plate I, Fig. A).

There is a shrub or small tree, extensively cultivated especially in the East, which has abundant small pink flowers in spring or summer. This will appear to the novice as without show of leaves, seeming to consist of hundreds of green thread-like growths. The name given to the plant is tamarix or tamarisk. If the reader can procure a piece of this plant, let him examine the fine sprays of green thread-like portions with a magnifier. Along these he will observe pointed, triangular, partially clasping parts. These, though smaller than a pinhead, are the simple leaves of this plant. They are full leaves because they are at the joints of the stem (Figs. 35–37).

The three plants here given, red cedar, arborvitæ, and tamarix, have the smallest leaves found on any of our trees and shrubs.

Large leaves, the largest there are on any of the northern shrubs, will be found on a very beautiful thorny plant called Hercules' club (Fig. 336). These are closely crowded at the blunt ends of the stems. These leaves with their enlarged bases nearly cover the whole surface of the blunt tip. Lower down on the old stem the scars, where the leaves were in earlier years, will show as broad V-shaped marks. The leaves on this plant will often be over a yard long and consist of 75 to 150 blades.

Arrangement of Leaves. — In this search for leaves marking the joints of stems, one will have noticed that there are frequently two or more leaves at the same joint. Over half of the kinds of cultivated shrubs in the United States have only one leaf at the joint (Plate III, Fig. M); a smaller number have two (Plate II, Fig. K) opposite

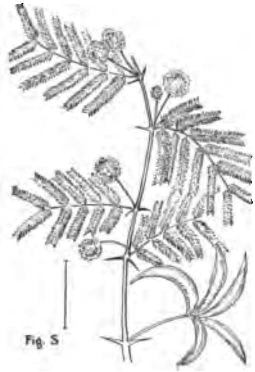


Fig. S

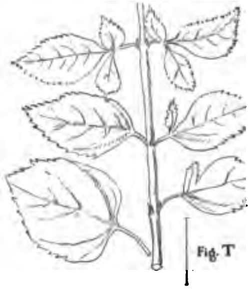


Fig. T

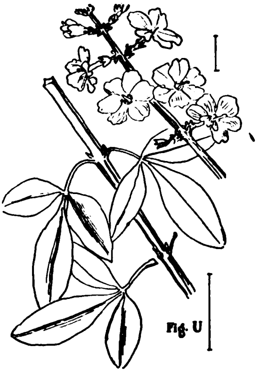


Fig. U

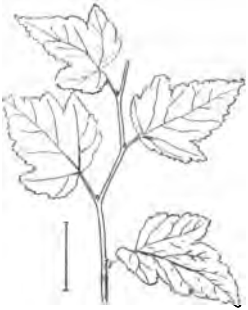


Fig. V

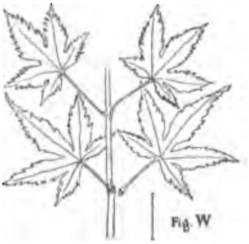


Fig. W

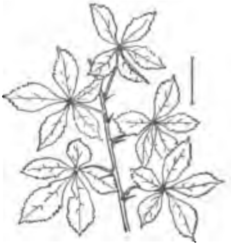


Fig. X

PLATE IV

each other; while a few have three or more regularly arranged around the same joint. These illustrate the three common arrangements which leaves take — *alternate* (one at a joint), *opposite* (two at a joint), and *whorled* (over two at a joint).

There is another apparent arrangement of leaves which will more or less bother the beginner and must be mastered. This is where the leaves are clustered either at the tips of the stems, as in the azaleas (Plate I, Fig. D), or in alternate bunches along the usually thorny branches, as in the barberries (Plate I, Fig. E). Besides these arrangements, which occur on the new growth, the old wood will have clusters of two or more leaves where the leaves were in the preceding year; of course this is the bursting and developing of the axillary buds and should produce branches of the year instead of close clusters of leaves. Usually branches do appear, but in a few species all the axillary buds start and so most of them form only short stunted side shoots which appear merely like a cluster of leaves. One must not mistake these for whorls of leaves. Where leaves are whorled, they are regularly arranged around the stem at the joint, and are not a cluster either at the tip or on the side of the stem.

Kinds of Leaves. — Having reached the stage where the whole leaf is readily determined, the next step is to know how to use words exactly in describing leaf differences. Most leaves or bushes consist more or less of a leaf stalk and a single blade, the spreading portion; these are called *simple* leaves, and numerous examples can be found in any shrubbery. The viburnum, the mock orange, and the maple have opposite simple leaves (Plate II, Fig. K; Plate III, Fig. N; Plate IV, Fig. W), while the rhododendrons, the smoke bush, and the silverberry have alternate simple leaves (Fig. 445; Plate I, Fig. F; Plate II, Fig. I).

If the leaf has more than one blade, it is called *compound*. The elder, the pagoda tree, the rose, and the buckeye have compound leaves (Plate III, Fig. P; Plate III, Fig. R).

At the base of the blade of simple leaves there are in a few cases a pair of blade-like parts at the side of the leaf stalk, which are called stipules. Of the common shrubs the one showing these most conspicuously is the so-called Japan quince. Books make much of stipules, in the text, but they are so rarely seen, except in the earliest spring, that I have left them almost entirely out of consideration in the keys and the descriptions. All oaks are said to have stipules, but they are so short-lived that none are to be found when the leaves have fully expanded.

There are two distinct plans for the arrangement of the blades on compound leaves. They are either all together at the end of the leaf stalk, as in the red clover with 3 blades, or in the horse chestnut with 7 blades, these are called *palmately compound* (Plate IV, Fig. X); or they are regularly arranged along the stalk as in the elder and common sumach, these are called *pinnately compound* (Plate III, Fig. P).

The pinnately compound leaf may have an even number of blades, there being no blade at the tip; in this case it is called *evenly* or *abruptly pinnate* (Plate IV, Fig. S). More frequently there is an odd blade at the end, and the leaves are *odd pinnate* (Plate III, Fig. Q).

Both palmate and pinnate leaves may be the second or third time divided before the blades are reached; in such cases they are twice (bi) or thrice (tri) palmate or pinnate as the case may be. The mimosa (Plate IV, Fig. S) is twice or *bipinnate*, and the astilbe (Fig. 239) is three times or *tripalmate*. The honey locust is curious; many of its leaves are once pinnate, while those on the rapidly growing twigs are bipinnate. Both the mimosa and the honey locust lack end blades and are abruptly pinnate.

As far as the classification of leaves has been given, it can be summed up in the following:

Summary of Kinds of Leaves.—Leaves mark the joints of stems of plants; they may be *alternate* when one at a joint, *opposite* when two at a joint, *whorled* when over two are arranged around the joint, and *clustered* when several are together at one side of the joint; they are *simple* when there is but one blade to a leaf and *compound* when there is more than one blade. Compound leaves are divided into *pinnate* when the blades are attached along the stalk and *palmate* when they are at the end. Pinnate leaves may be *odd pinnate* when there is an odd blade at the end and *abruptly pinnate* when there is no end blade. Pinnate or palmate leaves may be *bipinnate* or *bipalmate* if the blades are not reached till there is a second division of the parts; it is even possible to have them *tripinnate* or *tripalmate*, though such a complication is rare among shrubs. (There are two sub-shrubs often cultivated and popularly called spirea, aruncus and astilbe, which have tripalmate leaves).

Margins of Blades of Leaves.—The next important difference to be noted is in the *edges* of blades of all leaves, simple or compound, which may be studied in the four plates in this chapter and the accompanying descriptions. This difference, in such terms as will be easily comprehended by any one, divides the blades into three classes: (1) *entire*, where the edge or margin is without regular notches of any kind; (2) *notched* or *serrated*, where there are regular and somewhat saw-toothed notches; and (3) *lobed*, where there are a few larger indentations. A lobed blade may have its lobes entire or serrated.

The more luxuriant or vigorously growing a plant is the more inclined it is to have notches or lobes along the edges of its blades; in deciding under which class to place a plant do not too closely examine these exceptional cases of vigor. The younger and the older growing parts of mulberries illustrate these leaf differences with reference to edges of blades.

Veining of Blades of Leaves.—Another of the differences in the blades of leaves necessary to know is that of the veining (see Plates I–IV, Figs. A–X). Nearly all blades will be found to have a conspicuous central vein called the *midrib* extending the length of the blade. Frequently there are two or more side veins of almost equal strength extending from the base of the blade. If these are more conspicuous than others and extend outward toward the sides, the blades are said to be *radiate-veined;* but if they more or less follow the direction of the midrib, the blades are said to be 3-ribbed, 5-ribbed, or 7-ribbed as the case may be. A more common veining is when the only rib extending from the base is the midrib and the veins next in size extend from this in a regular manner outward from base to tip; this gives what is called *feather-veining.* A peculiar variety of feather-veining is shown in birch and elm leaves, where the veins along the sides of the midrib are distinctly marked and extend nearly parallel with each other to the margin of the blade; this is called *straight-veined.*

Between all these ribs and veins there is, in almost all bushes, a network of fine veins which gives the name *net-veined* to the blades. In the United States there are many leaves so thick and fleshy that this network does not show, and the blades are well described as *obscurely veined.* In such plants as wheat, corn, and the palms the veining does not form a network and the leaves are said to be *parallel-veined.*

Forms of Blades.—(See Plates I–IV, Figs. A–X, also other figures in book.) In the description of blade forms in this book only the commonest of English words are used and most readers will understand them without explanation and illustration; but for those who need a review of form words and their explanation a few paragraphs are given.

Broad blades more than half as wide as long will, if widest at about the middle, be called *oval;* if widest near the base, *ovate;* if widest near the tip, *obovate.* If the broad base of an ovate blade is somewhat notched, the blade is *cordate* or *heart-shaped;* if the broad tip has such a notch, it is *obcordate.*

Narrower blades when widest at the middle are *elliptic;* if widest towards the base, *lanceolate;* towards the tip, *oblanceolate.*

Any leaves when the sides are rather straight than curved will, if wide, be termed *oblong* and, if narrow, *linear.*

There are blades so broad and rounded as to be called *orbicular*, others so acutely notched at base as to need the word *arrow-shaped.*

Duration of Leaves.—The only difference in the duration of leaves generally considered is that some fall in the autumn while others last through the winter in a green condition; the words in common use to describe this contrast are *deciduous* and *evergreen.*

As this is a book intended mainly for summer use when the foliage is in good condition, many will find a difficulty in determining whether the leaves drop off and leave the twigs bare in winter. In general, the thicker and smoother the leaves the more apt they are to remain green through the winter and so be evergreen. This is no absolute difference; it is only a relative one. A mild winter will cause many plants to hold their leaves which in a severe winter they would lose. In the southern states there are many evergreen plants which in the North are deciduous.

If the examination of plants should be as early as June and be carefully conducted, nearly every shrub which holds its leaves through the winter can be determined because the old leaves can still be found. At that time the growth of the year can easily be separated from the growth of the preceding year. The contrast in brighter color and a smoothness to the new branches will readily indicate what is new growth. If the last year's twigs still have leaves in the regular places and not leaf-scars, where the leaves have fallen off, such leaves are of the earlier year and must have remained through the winter, so the plant is an evergreen.

In cases where the leaves are thick, smooth, and usually glossy, the plant may be considered an evergeen or nearly so. In the New England states very few of the shrubs are evergreen; not more than one fifth to one tenth of the species in cultivation in any one locality are evergreen; while in the Gulf states probably over half are so. Of course, nearly all the plants, either North or South, with minute scale-shaped or needle-shaped leaves, such as the pines, spruces, firs, arborvitæ, and cedars, are evergreen; these are almost without exception trees rather than shrubs. (The bald cypress, the larches, and the tamarisks are exceptions even in this group of scale-shaped and needle-leaved plants, as they are bare of foliage in winter.)

CHAPTER II

THE STUDY OF FLOWERS AND FRUIT

Purpose of this Book. — Most books on plants are primarily based on the critical microscopic examination of the flowers and their organs. For this the student must first be able to find the flowers in good condition, and be able to determine all about them. He must see the bottom of the pistil (the ovary) and not only find out about its cells, the attachment of the beginning of seeds (the ovules), but must know how many of these become true seeds with a plant (embryo). Concerning this plant within the seed-coats, he must know how many leaves there are, how these leaves are wrapped, folded, or wrinkled about the seed stem, and whether there is a food supply (reserve food) for the early growth of the seedling outside of the little plant. He must also know the kind of fruit it forms months later and the color of this fruit when ripe. He is asked to do all this before he can be ready to open the book to use a so-called key.

This impossible work has been asked of beginners in botany so long that many are afraid of anything called a "botany" and of anything termed a "key," and are purchasing any book which shows an easy way to know the wild flowers. Authors are even adding encyclopedic information to their "systematic synopsis," the modern expression for a key. This book is written for the use, and not for the bewilderment, of the vast majority of the public, who want some convenient way to learn the nature of the cultivated shrubs. After a leaf is known, but little is asked besides the color and size of the blossoms.

The parts of the flowers are rarely examined, though occasionally the number of petals needs to be counted. In all these cases the bright and conspicuous parts of flowers are called petals, even where the scientist has in the end determined that they are better called sepals or bracts. The attempt has been made to use only such words about flowers as any one, without studying botany, can properly apply. The keys are only to be used as keys, not as containing exhaustive information, giving none but the points needed to decide the name of the plant. They are intended to enable the student to find the names of the plants. Not because it will lead the inquirer to think that finding the name of anything is the end of study — this expresses so much of the criticism of keys — for it is but its beginning. An introduction is a necessary first step to an acquaintance. Without knowing a name we cannot use books containing detailed information and, more than this, we cannot make an independent investigation. We need to call by some name anything about which we wish to make mental or written notes and it ought to be a name in general use and, if possible, one applied in books.

Dr. Henry van Dyke has well expressed a universal truth about naming things, though many scientists in college and university devote much time to decry and deny it. In "Little Rivers" he says: "There is a secret pleasure in finding these delicate flowers in the rough heart of the wilderness. It is like discovering the veins of poetry in the character of a guide or a lumberman. And to be able to call the plants by name makes them a hundredfold more sweet and intimate. Naming things is one of the oldest and simplest of human pastimes. Children play at it with their dolls and toy animals. In fact, it was the first game ever played on earth, for the Creator who planted the garden eastward in Eden knew well what would please the childish heart of man when he brought all the new-made creatures to Adam, 'to see what he would call them.'"

Now the purpose of this book is to enable a person to name the shrubs without a previous study of botany or the use of the microscope. Nothing will be required but a close examination by the unaided eye. Wherever an illustration will make the work easier, it will be found.

Flower Organs. — A few words about the great and important flower organs. The introduction will bring to the mind in review what most of us have known. Flowers are for the production of fruit and seed, and the bright colors and strong odors are for the purpose of attracting the proper insects so that better seeds shall result. The bright and conspicuous parts of the flower are called petals and together the petals form the corolla. Inside these showy parts the all-important organs for seed production, *stamens* and *pistils*, are to be found. The stamens furnish a fine dust (*pollen*) from their enlarged end (*anther*); the presence of this can be seen in nearly all flowers which are not so double as to have lost the pollen and thus the power to form seeds. This pollen is needed on the end (*stigma*) of the central organ of a flower (pistil), and by its aid the seeds are formed within the bottom of the pistil (*ovary*). The ripened ovary is the fruit.

In many flowers the petals grow more or less together. They are fully united in the common morning glory, partially so in lilac blossoms, and entirely separated in apple and cherry blossoms. Sometimes the number of petals will be required, a matter easy to determine when the parts are separated as in apple blossoms, about as easy in the lilac flowers because their edge has lobes representing them, and even in the morning glory peculiar stripes mark the division of the petals.

The number of stamens will occasionally be wanted, but in most flowers they are few and can readily be counted. If over twenty, they will be called "many." In a few cases a little caution is necessary in counting, as the anther at the end of stamens is almost universally 2-lobed because there are two to four cells to hold the pollen; in a lilac blossom, where there are but two stamens, a careless glance might lead one to say there were four. The occasional growing together of stamens must be noted.

A few words about the pistil and its many peculiarities. One should get the habit of seeing the pistil in flowers. It is the central part of the flower and has at its bottom the fruit-forming part (ovary) and at the top the stigma, where the pollen is received. Some flowers contain more than one pistil from stigma to ovary; most have but one ovary, and whatever it may have of stigmas, to represent parts from which it was formed, they are all united at the bottom into one fruit-forming part. The counting of stigmas, when required, is easy.

There is one very useful word which is often applied in this book and also in other manuals, — the word is *sessile*, and it means without any stem or stalk. Petals, anthers, stigmas, whole flowers, and even clusters of flowers may be sessile. Leaves and blades of leaves may be sessile. Berries, pods, and all kinds of fruits may be sessile. Now any of these parts of a plant may have a stalk or stem and thus not be sessile. The work of invention that has been bestowed on stalks to name each and every one differently so well illustrates how scientists in making the language of description exact have made it difficult to become the language of the people that I am tempted here to give some of these stalk names.

Petiole — the stalk of a leaf.

Peduncle — the stalk of a solitary flower or a cluster of flowers if attached above ground on a plant.

Scape — for the same stalk if it rises out of the ground.

Pedicel — the stalk of a flower in a cluster of flowers.

Filament — the stalk of an anther.

Stipe — the stalk of a pod, fern leaf, or mushroom.

Claw — the stalk of a petal.

In this book the word *stalk* is practically used throughout.

Arrangement of Flowers.—Flowers are called *solitary* when but a single blossom is found at the tip of a branch, whether it be the tip of the plant or the tip of an axillary growth from a leaf of the plant. They are *clustered* if more than one is found in either position. There are a few forms of clusters so common that their names are here given. Probably the commonest form of cluster is that of a *raceme;* in this a number of flowers on individual short stems branch at different points along the main stalk. If these stems all extend from the tip, an *umbel* is formed; if from nearly, but not quite the same place, the whole forms a rather flat cluster, and a *corymb* is the result. If a second division occurs before flowers are found, all of these forms above are said to be compound; the compound raceme is so common that *panicle* is the word describing it.

Besides these clusters of flowers, where the individual blossoms have appreciable stalks, there are two cases where the blossoms are about sessile; if the cluster is elongated, it forms a *spike*, and if rounded, a *head.* There is a form of spike so common on shrubs and trees that a word to denote it is important and will occasionally be found in the text — the word *catkin.* The birches, willows, oaks, hazelnuts, etc., have catkins. These are usually slender clusters drooping from the twigs and consist of male flowers. The catkins are so ornamental in some of the willows that the name pussy willows is given to the plants. Flat-topped clusters with an older central flower on each branch are called *cymes.*

The Fruit.—The part formed from the ovary of a flower is in general called the fruit. Fruits are divided into dry fruits and fleshy fruits. So far all is easy to any one; but the full classification of either fleshy or dry fruits, as given in the text-books of botany, is difficult; and in the most advanced books there are found many points of the classification which even scientists cannot apply to all individual cases.

In this book few fruit terms are employed and include names for all the forms found on shrubs. Nearly all the small fleshy fruits are here called *berries*. Berries ought to have more than one seed, which is usually true of them. There is a class of fleshy fruits (usually large, but sometimes small) which has a single stone-covered seed, represented by the peach, plum, and cherry. These have been called *drupes* so generally that the word will occasionally be given, though in the text it will often be preceded by a word which will explain it, as, a cherry-like drupe. Fruits with several to many seeds in horny-coated cavities, so well illustrated in the apple and pear, are called *pomes*. This word will never be found except when modified by explanatory words. Other forms may occur and illustrative words will explain them, as, orange-like fruit, blackberry-like fruit. The fleshy fruits will generally be "berries" and "drupes" in the text.

The dry fruits will be called *pods*, if of one cell and several seeded; *capsules* or seed vessels if of more than one cell except when single-seeded and these will be seed-like (*achenes*), nut-like (*nutlets*).

In general, all terms outside of the common words of the English language, used in the descriptive portion of this book, will be explained or illustrated by drawings. This, therefore, is a book needing no Glossary (though a short one is given to help one to overcome an occasional forgetfulness).

PART II

KEYS TO THE GENERA

DIRECTIONS FOR USE OF THE KEYS

General Cautions. — In using any of the keys: (1) *Never read any but the statements to which you are directed by the letter in parenthesis;* (2) *read all the statements following the given letter to which you are directed and choose the one which seems nearest right about your specimen.*

General Directions. — All the keys have several starred (*) sections. These are all to be read and one chosen. At the end of this there is a letter in parenthesis and just below it a statement following this same letter. Following or further down the page, but at the same distance from the left side of the page, other statements coming after the same letter are to be found. All these need to be read. The one that best suits the plant in hand is always to be chosen and the letter in parenthesis noted. Proceed till a name, instead of a letter in parenthesis, occurs.

In this Part II there is given the name of the genus of the plant, with the page in Part III where the different species of the genus are described and illustrated. If there are several genera given, turn to all the pages noted and, by the descriptions or the figures, conclude which is the right one. In Part III the keys are to be used as in Part II, but the names there given are the full names of the plants.

In the General Opening Key on page 34 the numbered keys up to and including Key 8 contain the great proportion of all shrubs. The others include all the peculiar plants. It will be well to read these latter, as much time can be saved if your plant is so unusual as to belong to one of these small sections. Key 9 is most useful if your plant has all of its leaves very small.

Pronunciation. — The vowel of an accented syllable if marked by a grave accent (ˋ) is long, and if marked by an acute accent (ˊ) is short.

GENERAL OPENING KEY

All the starred portions of this key should be read and the one taken whose description best suits the plant in question. The first three starred portions are intended to include all the plants, if worked with in the summer. The fourth is for winter use. The fifth includes the small number of shrubs which are thorny or prickly. The sixth to the last inclusive are only for those with special arrangement of leaves. (In all the special keys there are often several sections based on different conditions of the plants.)

* Leaves opposite or whorled on the stem. (This does not include plants with clusters of leaves on one side of the stem, but those with 2 or more leaves regularly arranged around the stem at the joints.) (**A.**)

- **A.** Leaves simple, having but one blade to the leaf. (**B.**)
  - **B.** Leaves with entire edges, neither notched nor lobed ... Key 1.
  - **B.** Leaves with notched but not distinctly lobed edges .... Key 2.
  - **B.** Leaves with lobed edges; the lobes either notched or entire .... Key 3.
- **A.** Leaves compound, shown by their having 2 to many blades .... Key 4.

* Leaves alternate, with one leaf at a joint of the stem. (**C.**)

- **C.** Leaves simple, having but one blade to the leaf. (**D.**)
  - **D.** Leaves with entire edges, neither notched nor lobed ... Key 5.
  - **D.** Leaves with notched but not distinctly lobed edges...... Key 6.
  - **D.** Leaves with lobed edges; the lobes either notched or entire .... Key 7.
- **C.** Leaves compound, shown by their having 2 to many blades .... Key 8.

* Leaves very small, less than an inch long. (Of course these might be found under the above *s, but it is convenient to have in a single key the few plants with very small leaves; the blades of a compound leaf must not be considered leaves.)............ Key 9.

* Winter keys for deciduous leaved plants which show either flowers or fruit when the stems are bare of foliage. (**E.**)

E. Plants with winter or early spring flowers.............. Key 10.

E. Plants with fall or winter fruits....................... Key 11.

* Special key for thorny and prickly plants, including cactus growths, plants which seem to have no foliage, and those with spiny-edged leaves .... Key 12.

* Plants with a close cluster of leaves at the tips of the branches. (**F.**)

F. Plants with evergreen leaves. (**G**)

G. Leaves simple, 1-bladed. Rhododéndron (p. 260). Kálmia (p. 256). Pittósporum (p. 68). Skímmia (p. 84).

G. Leaves very compound. Nandìna (p. 67).

F. Plants with deciduous leaves. Azàlea (p. 257). Zanthorhìza (p. 58).

* Plants with alternate clusters of leaves along the stem; without thorns (if thorny plants, see 2d * above). Plumbàgo (p. 268). Bérberis (p. 64).

* Plants with leaves only at the base and practically no bushy stem. Chimáphila and Pýrola (p. 265).

KEYS TO THE GENERA

Key 1. Leaves opposite (or whorled), simple, entire-edged and without lobes.

(For small-leaved plants, leaves under 1 inch long, use Key 9, p. 51.)

Key based mainly on flowers. The numbers refer to the pages.

* Flowers conspicuous either by size or clustering and regular, not lopsided (irregular). (**A.**)

A. Flower clusters more or less globular, stamens so numerous and long as to hide other parts. Acàcia (p. 132).

A. Flower petals united into a more or less tubular portion. (Under next **A** see Chionánthus.) (**B.**)

B. Tube slender with a 4-lobed usually spreading border. (**C.**)

C. Stamens 2 at mouth of tube. (Lilac) Syrínga (p. 275). (Privet) Ligústrum (p. 279). Òlea (p. 282). Osmánthus (p. 282).

C. Stamens 4 within the tube. Cephalánthus (p. 241). Búddleia (p. 287).

C. Stamens 8; flowers with no outer calyx-like portion. Dáphne (p. 298).

B. Tube slender with 5-lobed spreading border (sometimes double). (**D.**)

D. Flowers waxy-white, often double; leaves evergreen. Gardènia (p. 240).

D. Flowers with a toothed crown in center; leaves evergreen. Nèrium (p. 270).

D. Flowers with a conspicuous colored calyx. Clerodendron (p. 291).

B. Tube very short, flowers broadly spreading with a 5-lobed border. Vibúrnum (p. 219).

B. Flowers bell-shaped, yellow, 4-lobed, in earliest spring. Forsýthia (p. 274).

B. Flowers cup-shaped with 10 stamens in dent-like pockets, in summer. Kálmia (p. 256).

A. Flower petals entirely separate (in Chionanthus only apparently separate). (**E.**)

E. Flowers 1 inch or more in size. (**F.**)

F. Flowers yellow with many stamens. Áscyrum (p. 74). Hypéricum (p. 77).

F. Flowers purplish with many thick pieces and sweet odor. Calycánthus (p. 186).

F. Flowers bright scarlet with thick elongated calyx; fruit large. Pùnica (p. 209).

F. Flowers of many colors with stalked and wrinkled petals. Lagerstrœmia (p. 209).

F. Flowers white (sometimes purplish; often with a dark center in Cístus). (**G.**)

G. Petals 5 (rarely 4); stamens many; leaves generally aromatic. (**H.**)

H. Fruit dry pods; flowers large and rose-like. Cístus (p. 71).

H. Fruit fleshy; southern. Mýrtus (p. 204). Eugènia (p. 206). Psídium (p. 206).

G. Petals 4, rounded and broadly spreading. (**I.**)

I. Flowers 1-2 inches wide, usually sweet-scented. Philadélphus (p. 196).

I. Flowers apparently over 2 inches wide (the true flowers are small and in the center). Córnus (p. 214).

G. Petals 4, long and slender (somewhat united at base). Chionánthus (p. 287).

E. Flowers smaller. (**J.**)

J. Petals 5; stamens many. Hypéricum (p. 77). Eugènia (p. 206).

J. Petals 4, yellow; stamens many. Áscyrum (p. 74).

J. Petals and stamens 4 or 5. Euónymus (p. 91). Córnus (p. 214).

* Flowers conspicuous and irregular, lopsided or 2-lipped. (**K.**)

K. Flowers more or less in pairs, never blue; fruit berries. Lonícera (p. 230).

K. Flowers large, showy, nearly white; fruit long capsules with winged seeds. Catálpa (p. 286). Chilópsis (p. 286).

K. Flowers small, blue. Teùcrium (p. 294). Rosmarìnus (p. 294).

* Flowers inconspicuous. (**L.**)

L. Leaves heart-shaped with about 5 basal ribs. Cercidiphýllum (p. 62).

L. Leaves not distinctly heart-shaped; fruit fleshy. (**M.**)

M. Leaves with silvery scales. Shephérdia (p. 303).

M. Leaves without silvery scales, evergreen. Òlea (p. 282). Osmánthus (p. 282). Búxus (p. 306). Fìcus (p. 308). Phoradéndron (p. 306).

M. Leaves without silvery scales, deciduous. Symphoricárpos (p. 228).

Key 2. Leaves opposite (or whorled), simple with notched but not robed edges.

(For small-leaved plants, leaves under 1 inch long, use Key 9, p. 51.)

Key based mainly on leaves. The numbers refer to the pages.

* Leaves thick and plainly evergreen. (**A.**)

A. Almost stemless plants with nodding waxlike flowers ½ inch broad. Chimáphila (p. 265).

A. Low plants with small broadly spreading white flowers and 1-seeded berries hanging on through the year. Ardísia (p. 368).

A. Taller shrubs. (**B.**)

B. Leaves under 3 inches long. Abèlia (p. 237). Euónymus (p. 91).

B. Leaves over 3 inches long; fruit berry-like or 1-seeded cherry-drupe-like. (**C.**)

C. Flowers small, white, fragrant with a tube and a 4-lobed spreading border, salver-shaped. Osmánthus (p. 282). Òlea (p. 282).

C. Flowers small, white, united at base and broadly spreading. Vibúrnum (p. 219). Ardísia (p. 268).

C. Flowers small, dull purple; leaves often mottled. Aucùba (p. 218).

* Leaves thinner and deciduous. (**D.**)

D. Leaves rather heart-shaped and basal- or radiate-ribbed. (**E.**)

E. Leaves slightly notched, about 5-ribbed. Cercidiphýllum (p. 62).

E. Leaves distinctly notched. (**F.**)

F. Fruit dry and 2-winged like all maples. Àcer tatáricum (p. 105).

F. Fruit many-seeded short capsules in spreading calyx; flowers large, white or creamy. Philadélphus (p. 196).

F. Fruit drupes with flattened stones. Vibúrnum (p. 219).

D. Leaves more or less heart-shaped, feather-veined, not basal-ribbed. (**G.**)

G. Leaves doubly notched and plaited; fruit about 4 black bead-like parts in spreading calyx remaining through the winter. Rhodotýpos (p. 163).

G. Leaves not plaited. Hydrángea (p. 192).

D. Leaves not heart-shaped at base. (**H.**)

H. Stem somewhat 4-sided or 4-ridged, often conspicuously so. (**I.**)

I. Flowers regular, not lopsided. (**J.**)

J. Flowers yellow, bell-shaped, 4-lobed, in early spring. Forsýthia (p. 274).

J. Flowers pink to violet with a long tube and 4-lobed spreading border. Búddleia (p. 287).

J. Flowers broadly spreading with 4 or 5 petals; fruit bright colored in fall. Euónymus (p. 91).

I. Flowers irregular, lopsided or 2-lipped. Teùcrium (p. 294). Caryópteris (p. 288).

H. Stem not conspicuously ridged or winged. (**K.**)

K. Flowers large in large snowball-like clusters. Vibúrnum (p. 219). Hydrángea (p. 192).

K. Flowers small (sometimes large ones at border) in broad clusters. Vibúrnum (p. 219). Hydrángea (p. 192).

K. Flowers large with 4 rounded broadly spreading petals in a large green calyx. Philadélphus (p. 196). Rhodotýpos (p. 163).

K. Flowers funnel-form, large, ½–2 inches long. Weigèla (p. 234). Abèlia (p. 237).

K. Flowers white or pink of 5 thick petals (or double). Deùtzia (p. 191).

K. Flowers large in large clusters, usually with colored calyx. Clerodéndron (p. 291).

K. Flowers yellow, bell-shaped, 4-lobed, in early spring; fruit large, 1 inch long, rough, many-seeded. Forsýthia (p. 274).

K. Flowers small; berries small with 1–4 seeds. Callicárpa (p. 289). Rhámnus (p. 93).

Key 3. Leaves opposite (or whorled), simple, with a lobed border. (For small-leaved plants, leaves under 1 inch long, use Key 9, p. 51.) Key based on leaves.

* Leaves palmately veined and lobed. (**A.**)
- **A.** Leaves slightly lobed (usually with notched border). Philadélphus (p. 196).
- **A.** Leaves decidedly 3-lobed. Vibúrnum (p. 219). Àcer (p. 103).
- **A.** Leaves 5–11-lobed. Àcer (p. 103).
- **A.** Some leaves 2- or 3-lobed, others merely notched, others with 3 blades. Forsýthia (p. 274).

* Leaves feather-veined and lobed. (**B.**)
- **B.** Leaves very large, 6 inches or more long. Hydrángea (p. 192).
- **B.** Leaves 2–6 inches long, some serrate, some 3-lobed, some 3-bladed. Forsýthia (p. 274).
- **B.** Leaves under 2½ inches long, some lobed, others not. Symphoricárpos (p. 228). Syrínga (p. 275).

Key 3a. Key based on flowers.

* Flowers conspicuous either by clusters or by large individual flowers. (**A.**)
- **A.** Flowers yellow, bell-shaped, 4-lobed, in early spring. Forsýthia (p. 274).
- **A.** Flowers white to light purplish with tube and 4-lobed spreading border. (Persian Lilac) Syrínga pérsica laciniàta (p. 277).
- **A.** Flowers white, small or large, or small and large in clusters, in spring. Vibúrnum (p. 219).
- **A.** Flowers pinkish white, large in elongated clusters, in summer. Hydrángea (p. 192).

* Flowers inconspicuous either in size or by dull colors. (**B.**)
- **B.** Leaves decidedly and radiately lobed; fruit dry, 2-winged. Àcer (p. 103).
- **B.** Leaves slightly lobed; fruit 2-seeded berries. Symphoricárpos (p. 228).

Key 3b. Key based on fruit.

* Fruit fleshy, small (or absent). (**A.**)
- **A.** Drupes red or black with flattened stones (or without fruit, all flowers sterile). Vibúrnum (p. 219).
- **A.** Berries white or red with 2 seeds. Symphoricárpos (p. 228).

* Fruit dry. (**B.**)
- **B.** Fruit 2-winged, 2-seeded. Àcer (p. 103).
- **B.** Fruit elongated, 2-celled, 4-seeded. (Lilac) Syrínga (p. 275).
- **B.** Fruit many-seeded. Forsýthia (p. 274). Hydrángea (p. 192). Philadélphus (p. 196).

Key 4. Leaves opposite, compound.

Key based mainly on leaves and fruit.

* Leaves with 3 small glossy entire-edged blades; twigs green, 4-angled. **Jásminum** (p. 273).

* Leaves with 3 notched blades; fruit dry. **Forsýthia** (p. 274). **Staphylèa** (p. 105). **Àcer** (p. 103).

* Leaves pinnate of 5–11 blades. (**A.**)

A. Fruit inflated bladder-like; blades regularly and finely notched. **Staphylèa** (p. 105).

A. Fruit, if formed, 2-winged, maple-like; blades irregularly and coarsely notched. **Àcer** (p. 103).

A. Fruit elongated, 2-celled, 4-seeded; some of the leaves simple. (Persian Lilac) **Syrínga pérsica laciniàta** (p. 277).

A. Fruit a berry 2-seeded, blades of leaves less than an inch long, entire-edged. **Jásminum** (p. 273).

A. Fruit a berry; blades over an inch long, notched. **Sambùcus** (p. 226).

A. Fruit a long capsule with winged seeds; flowers large, yellow. **Técoma** (p. 285).

* Leaves twice-pinnate, blades much cut; fruit a berry. **Sambùcus** (p. 226).

* Leaves palmate of 5–11 blades, blades all from one point. (**B.**)

B. Leaves 5–7-bladed, spicy when bruised; fruit berries. **Vìtex** (p. 289).

B. Leaves 5–7-bladed, not spicy; fruit large capsules. **Ǽsculus** (p. 102).

B. Leaves 5–11-bladed; fruit dry, 2-winged. **Àcer** (p. 103).

Key 4a. Key based on flowers.

* Flowers conspicuous either by clustering or by large individual flowers. (**A.**)

A. Flowers yellow (**B.**)

B. In early spring or winter before leaves expand. (**C.**)

C. Large, 1 inch, bell-shaped, 4-lobed. **Forsýthia** (p. 274).

C. Smaller with a slender tube and 5-lobed spreading border (or double). **Jásminum** (p. 273).

B. In late spring, of 4 unequal petals. **Ǽsculus** (p. 102).

A. Flowers white to purple or blue. (**D.**)

D. Irregular, 2-lipped, in summer; herbage spicy. **Vítex** (p. 289).

D. Regular, with the corolla united more or less. (**E.**)

E. Flowers tubular with 4-lobed spreading border. (Lilac) **Syrínga** (p. 275).

E. Flowers tubular with a 5-lobed spreading border (or double). **Jásminum** (p. 273).

E. Flowers short with a 5-lobed spreading border, in large clusters. Sambùcus (p. 226).

D. Regular with corolla of 5 separate petals; fruit bladder-like. Staphylèa (p. 105).

* Flowers inconspicuous by small size or lack of color. Àcer (p. 103).

Key 5. Leaves alternate, simple with entire edges.

(For small-leaved plants, leaves under 1 inch long, use Key 9, p. 51).

Key based on leaves. For a key based more on flowers, see the next, 5 a.

* Spiny or thorny plants. (**A**.)

A. Leaves with silvery scales on one or both sides. Elæágnus (p. 300). Hippóphaë (p. 303).

A. Leaves without silvery scales. (**B**.)

B. Fruit 1 to few-seeded berries. Bérberis (p. 64). Lýcium (p. 284).

B. Fruit 1-seeded cherry-like drupes. Bumèlia (p. 269).

B. Fruit (when found) large, orange-like in form and size; plant milky-juiced. Maclùra (Tóxylon) (p. 310).

B. Fruit elongated pea-like pods. Acàcia (p. 132). Ùlex (p. 113).

* Plants not spiny. (**C**.)

C. Leaves heart-shaped. 1, fully shrubby, Cércis (p. 125). 2, herbaceous, Polýgonum (p. 299).

C. Leaves narrow, one fourth as wide as long. (**D**.)

D. Flowers over an inch long of 5 bright yellow petals. Heliánthemum (p. 69).

D. Flowers with a long tube and 4-lobed spreading border. Dáphne (p. 298).

D. Flowers small; fruit a 1-seeded berry; leaves silvery below. Elæágnus (p. 300).

D. Flowers small, globular, 5-lobed, in June. Andrómeda polifòlia (p. 253).

D. Flowers usually in globular clusters, apparently of yellow stamens only. Acàcia (p. 132).

D. Flowers with long red stamens, sessile in a leafy-tipped cluster. Callistèmon (p. 207).

C. Leaves larger and wider, decidely aromatic or pleasantly scented. (**E**.)

E. Leaves thick and about evergreen. Pérsea (p. 294). Myrìca (p. 311). Skímmia (p. 84). Callistèmon (p. 207).

E. Leaves thinner and deciduous. Benzòin (p. 297). Sássafras (p. 296).

C. Leaves thick, evergreen or nearly so, not especially aromatic. (**F**.)

F. Flowers large, ½ inch to several inches broad. (**G.**)
  - **G.** Flowers very large with 6, 9, or 12 fleshy petals. **Magnòlia** (p. 58).
  - **G.** Flowers with 5 separate petals. **Pittósporum** (p. 68).
  - **G.** Flowers cup-shaped with 10 stamens in dents of corolla. **Kálmia** (p. 256).
  - **G.** Flowers bell-shaped and slightly irregular, lopsided. **Rhododéndron** (p. 260).

F. Flowers smaller, generally under ½ inch broad (in Acàcia, closely clustered so as to appear larger). (**H.**)
  - **H.** Flowers with the petals entirely separate or so nearly so as to appear separate. (**I.**)
    - **I.** Petals 5, white or nearly so. **Lèdum** (p. 263). **Sýmplocos** (p. 273). **Escallònia** (p. 188). **Cotoneáster** (p. 176). **Cleyèra** (p. 81). **Photínia** (p. 179).
    - **I.** Petals 6; flowers attached to the leaves. **Rúscus** (p. 323).
    - **I.** Petals usually 4 (sometimes 5). **Pittósporum** (p. 68). **Cyrílla** (p. 89).
    - **I.** Petals 4 to 6, almost separate. **Ìlex** (p. 86). **Ardísia** (p. 268). **Skímmia** (p. 84).
  - **H.** Flowers with the corolla united into a globular bell or urn form having a 5-lobed border. (**J.**)
    - **J.** Fruit dry 5-celled many-seeded capsules. **Andrómeda** (p. 249).
    - **J.** Fruit red berries. **Árbutus** (p. 249). **Arctostáphylos** (p. 246).
  - **H.** Flowers tubular with a 4-lobed spreading border. **Dáphne** (p. 298).
  - **H.** Flowers small in clusters, 5-parted and peculiar in form. **Ceanòthus** (p. 97).
  - **H.** Flowers hidden in a globular or urn-shaped receptacle; juice very milky. **Fìcus** (p. 308).

C. Leaves deciduous and not especially narrow nor as above given. (**K.**)
  - **K.** Leaves very large, 5–12 inches long, ill-scented; fruit large, fleshy. **Asímina** (p. 64).
  - **K.** Leaves with curved parallel side veins. **Córnus** (p. 214). **Rhámnus** (p. 93).
  - **K.** Leaves blunt and rounded at tip. **Rhús Cótinus** (p. 109). **Spirǽa** (p. 146).
  - **K.** Leaves not as above. (**L.**)
    - **L.** Flowers in catkins; wood soft. **Sàlix** (p. 314).
    - **L.** Flowers large, ¾ inch or more. (**M.**)

- **M.** 6 to 15 thick petals. Magnòlia (p. 58).
- **M.** 5 stalked petals. Exochórda (p. 161). Lagerstrœmia (p. 209).
- **M.** Pea-shaped flowers. 1, White. Cýtisus (p. 113). 2, Yellow. Genísta (p. 114).
- **M.** Funnel-shaped flowers, sometimes double. Azàlea (p. 257). Leucophýllum (p. 285).
- **M.** Salver-shaped flowers, long tube and 5-lobed spreading border. Plumbàgo (p. 268).
- **M.** Bell-shaped of 5 nearly separated petals. Stýrax (p. 270).

L. Flowers much smaller, ½ inch or less, petals united. (**N.**)
- **N.** Cup-shaped with 10 stamens in dents in corolla. Kálmia (p. 256).
- **N.** Tubular, bell- or urn-shaped or globular, with 5-lobed border. Andrómeda (p. 249). Gaylussàcia and Vaccínium (p. 244).
- **N.** Bell-shaped, yellow, very small, with 4-lobed border, in earliest spring. Dírca (p. 297).
- **N.** Leaves very large, 5–12 inches long, somewhat heart-shaped. Polýgonum (p. 299).

L. Flowers small with separate petals. (**O.**)
- **O.** Flowers white or greenish in conspicuous clusters. Spiræa (p. 146). Photínia (p. 179).
- **O.** Flowers white in long slender racemes. Cyrílla (p. 89).
- **O.** Flowers inconspicuous; fruit red or black berries ripe in fall. Nemopánthus (p. 88). Rhámnus (p. 93).

Key 5a. Leaves alternate, simple with entire edges.

(For small-leaved plants, leaves under 1 inch long, use Key 9, p. 51).

Key based mainly on flowers. For a key based on leaves, see the preceding, Key 5.

* Flowers yellow, yellowish or orange. (**A.**)
- **A.** Flowers large, 1 inch or more, funnel-shaped, somewhat irregular, lopsided. Azàlea (p. 257).
- **A.** Flowers large of 5 spreading petals open only in the sunshine. Heliánthemum (p. 69).
- **A.** Flowers large, irregular, pea-shaped. Genísta (p. 114).
- **A.** Thorny plants with small flowers in spring. Hippóphaë (p. 303). Bérberis (p. 64). Elæágnus (p. 300).
- **A.** Tough-barked plant, rarely cultivated, with very small flowers. Dírca (p. 297).
- **A.** Aromatic or spicy plants with small flowers in early spring. Sássafras (p. 296). Benzòin (p. 297). Pérsea (p. 294).

A. Evergreens with large, 1 inch or more, yellowish flowers. Magnòlia fuscàta (p. 61).

A. Flowers apparently consisting only of long stamens in clusters. Acàcia (p. 132).

* Flowers red, bright pink, purplish or lilac to blue. (**B.**)

B. Leaves evergreen (thick smooth leaves indicate evergreen character). (**C.**)

C. Flowers large, bell-shaped, somewhat irregular, in clusters in summer. Rhododéndron (p. 260).

C. Flowers large cup-shaped with 10 stamens in dents of corolla. Kálmia (p. 256).

C. Flowers small ovate or urn-shaped with 5-lobed border. Andrómeda (p. 249). Árbutus (p. 249). Vaccínium (p. 244).

C. Flowers with a tubular portion, 4-lobed spreading border and 8 included stamens. Dáphne (p. 298).

B. Leaves thinner and deciduous. (**D.**)

D. Spiny plants with purplish flowers. Lýcium (p. 284).

D. No spines. (**E**).

E. Flowers purplish brown, 1 inch wide, in early spring; fruit fleshy, 2–5 inches long. Asímina (p. 64).

E. Flowers funnel- or bell-shaped and somewhat irregular. Azàlea (p. 257). Leucophýllum (p. 285).

E. Flowers pea-shaped, purplish red, in early spring. Cércis (p. 127).

E. Flowers solitary, large with 6, 9, or 12 separate thick petals. Magnòlia (p. 58).

E. Flowers small ovate with a 5-lobed border, in clusters. Vaccínium (p. 244).

E. Flowers with a long tube and a
- 4-lobed border. Dáphne (p. 298).
- 5-lobed broadly spreading border. Plumbàgo (p. 268).

* Flowers white, creamy, or pinkish to greenish. (**F.**)

F. Flowers large, ½–8 inches wide. (**G.**)

G. Petals united at their bases and completely grown together. (**H.**)

H. Funnel-shaped and slightly irregular. Azàlea (p. 257).

H. Bell-shaped, somewhat irregular; leaves evergreen. Rhododéndron (p. 260).

H. Cup-shaped with 10 stamens in dents of corolla. Kálmia (p. 256).

H. Bell-shaped, regular with 4 lobes. Stýrax (p. 270).

H. Salver-shaped, long tube and a
4-lobed border. Dáphne (p. 298).
5-lobed spreading border. Plumbàgo (p. 238).

G. Petals separate. (**I.**)
I. Flowers large with 6, 9, or 12 thick petals. Magnòlia (p. 58).
I. Flowers with 5 petals (or double). Exochórda (p. 161). Spiræ̀a (p. 146).
I. Flowers irregular, pea-shaped. Cýtisus (p. 113).

F. Flowers small, under ½ inch, with the petals separate, or so nearly so as to appear separate. (**J.**)
J. Petals definitely 4 (in Skímmia 4 or 5). Córnus (p. 214). Nemopánthus (p. 88). Skímmia (p. 84).
J. Petals 5 (rarely 4–6). Ìlex (p. 86). Spiræ̀a (p. 146). Lèdum (p. 263). Cotoneáster (p. 176). Polýgonum (p. 299). Ceanòthus (p. 97).
J. Other southern shrubs with small white or nearly white flowers. Árbutus (p. 249). Ardísia (p. 268). Cleyèra (p. 81). Pittósporum (p. 68). Sýmplocos (p. 273). Rúscus (p. 323).

F. Flowers small, under ½ inch, with plainly united petals. (**K.**)
K. Flowers tubular, urn-shaped, or globular. (**L.**)
L. Fruit dry many-seeded pods. Andrómeda (p. 249).
L. Fruit fleshy with 10 or more seeds. Gaylussàcia and Vaccínium (p. 244).
K. Flowers bell-shaped,
plant spiny. Bumèlia (p. 269).
no spines. Stýrax (p. 270). Vaccínium (p. 244).

* Flowers inconspicuous, catkin-like or very rare. (**M.**)
M. Flowers in catkins; wood soft. Sàlix (p. 314).
M. Leaves oblong, evergreen; juice milky. Fìcus (p. 308).
M. Leaves broad and rounded at tip; fruit smoke-like. Rhús (p. 107).
M. Fruit 3-seeded berries. Rhámnus (p. 93).
M. Fruit 1-seeded drupes. Myrìca (p. 311).

Key 6. Leaves alternate, simple, with notched but not lobed edges. (For small-leaved plants, leaves under 1 inch long, use Key 9, p. 51.) Key based on all plant parts. Key based more particularly on flowers will be found next, Key 6a.

* Spiny or thorny plants. (**A.**)
A. Flowers with 5 separate petals, blooming in spring. Cratæ̀gus (p. 173). Prùnus (p. 142). Pýrus (p. 182).
A. Flowers nodding, yellow or yellowish. Elæágnus (p. 300). Bérberis (p. 64).

A. Flowers inconspicuous, usually greenish. **Rhámnus** (p. 93). **Zízyphus** (p. 99).

A. Leaves thick and about evergreen. **Bérberis** (p. 64). **Pyracántha** (p. 175). **Ìlex** (p. 86).

* Plants not spiny. (**B.**)

B. Leaves straight-veined but not oblique at base. (**C.**)

C. Fruit cone-like and hanging on till fall or through the year. **Álnus** (p. 312). **Bétula** (p. 311).

C. Fruit round nuts ¼–½ inch, ripe in fall. **Córylus** (p. 313). **Castànea** (p. 314). **Quércus** (p. 314).

C. Fruit not as above, in some cases absent. (**D.**)

D. Flowers white of many long stamens in snowy wreath. **Neviùsia** (p. 171).

D. Flowers white, sweet-scented, with 5 petals in erect clusters in summer. **Cléthra** (p. 265).

B. Leaves with oblique base. (**E.**)

E. Straight-veined. **Úlmus** (p. 308). **Hamamèlis** (p. 202). **Fothergílla** (p. 203). **Corylópsis** (p. 204).

E. Three-ribbed from base, small, 1 inch long. **Zízyphus** (p. 99).

B. Leaves heart-shaped at base. (**F.**)

F. With curved parallel side ribs. **Rhámnus cathártica** (p. 96).

F. No such parallel ribs. (**G.**)

G. Fruit cone-like, under 1 inch long, hanging on through the year. **Álnus** (p. 312).

G. Fruit round nuts, ripe in the fall. **Córylus** (p. 313). **Castànea** (p. 314).

G. Fruit dry capsule, 2-celled, 2-seeded. **Corylópsis** (p. 204). **Fothergílla** (p. 203).

B. Leaves not as above. (**H.**)

H. Leaves deciduous and (**I.**)

I. Very narrow linear or nearly so. **Sàlix** (p. 314). **Ìtea** (p. 201). **Rhámnus** (p. 93).

I. Three- or more ribbed from base. (**J.**)

J. Flowers with petals more or less united at base. (**K.**)

K. Flowers large, 1 inch or more, funnel-shaped (sometimes double). **Azàlea** (p. 257).

K. Flowers bell-shaped (½–1 inch). **Stỳrax** (p. 270). **Halèsia** (p. 272).

K. Flowers tubular, globular, or urn-shaped (½ inch or less). (**L.**)

L. Fruit a capsule. **Andrómeda** (p. 249).

L. Fruit berry-like with 10 or more seeds. **Gaylussàcia** and **Vaccínium** (p. 244).

K. Flowers with tube and 4-lobed spreading border; leaves silvery. Elæágnus (p. 300).

J. Flowers with petals separate or apparently so. (**M.**)

M. Flowers solitary, large, 2–5 inches, with five petals. Stuártia (p. 80). Gordònia (p. 80).

M. Flowers clustered, white (about 1 inch), with 5 stalked petals. Exochórda (p. 161).

M. Flowers small, ¼–½ inch, of 5 petals or double. (**N.**)

N. Fruit fleshy. Amelánchier (p. 180). Prùnus (p. 142). Pỳrus (p. 182). Photínia (p. 179).

N. Fruit dry. Spiræ̀a (p. 146). Clèthra (p. 265). Escallònia (p. 188).

M. Flowers yellow, often double (1 inch). Kérria (p. 162).

M. Flowers yellowish, small in hanging clusters. Bérberis (p. 64).

M. Flowers feathery, of conspicuous white stamens. Neviùsia (p. 171).

M. Flowers in catkins; wood soft. Sàlix (p. 314).

H. Leaves evergreen. (Thick glossy leaves indicate evergreen character.) (**O.**)

O. Flowers large, 2–5 inches, with waxy petals. Caméllia (p. 79). Gordònia (p. 80).

O. Flowers small, ½ inch, with 5 petals and 5 stamens. Escallònia (p. 188). Pittósporum (p. 68).

O. Flowers small, ¼ inch, with 5 petals and many stamens. Photínia (p. 179).

O. Flowers small, white, of 4 petals and 4 stamens. Ìlex (p. 86).

O. Flowers tubular, orbicular or ovate, small. Andrómeda (p. 249). Gaylussàcia and Vaccínium (p. 244). Árbutus (p. 249).

O. Flowers small, yellowish, of 5 slightly united petals in axillary clusters. Sýmplocos (p. 273).

O. Flowers inconspicuous; foliage sweet-scented, aromatic. Myrìca (p. 311).

O. Other evergreens only found outdoòrs South. Ardísia (p. 266).

Key 6a. Leaves alternate, simple, with notched but not lobed edges. (For small-leaved plants, leaves under 1 inch long, use Key 9, p. 51). Key based mainly on flowers.

* Flowers in catkins generally in early spring (usually yellow, due to the pollen). (**A.**)

A. Leaves sweet-scented, aromatic. Myrìca (p. 311).

A. Leaves straight-veined. **Álnus** (p. 312). **Bétula** (p. 311). **Castànea** (p. 314). **Córylus** (p. 313).

A. Other shrubs with catkin flowers; wood soft. **Sàlix** (p. 314).

* Flowers yellow, yellowish or orange, but not in catkins. (**B.**)

B. Leaves straight-veined and oblique at base. **Úlmus** (p. 308). **Corylópsis** (p. 204). **Hamamèlis** (p. 202).

B. Leaves straight-veined but not oblique at base, edge doubly and sharply serrate; twigs bright green with large pith. **Kérria** (p. 162).

B. Leaves clustered at ends of twigs; flowers large, 1 inch, funnel form. **Azàlea** (p. 257).

B. Leaves with silvery scales; plants often thorny; fruit fleshy, 1-seeded. **Elæágnus** (p. 300).

B. Leaves clustered along the branches; plants usually thorny. **Bérberis** (p. 64).

* Flowers pink to rosy or red. (**C.**)

C. Leaves evergreen. (Thickness and smoothness indicate evergreen.) **Ardísia** (p. 268). **Árbutus** (p. 249). **Camèllia** (p. 79).

C. Leaves deciduous and plants usually thorny. **Pỳrus** (p. 182). **Cratægus** (p. 173). **Prùnus** (p. 142).

C. Leaves deciduous and plants without thorns. (**D.**)

D. Flowers large, 2–5 inches, hollyhock-like. **Hibíscus** (p. 81).

D. Flowers much smaller of 5 separate petals (or double). **Prùnus** (p. 142). **Pỳrus** (p. 182). **Spiræa** (p. 146).

D. Flowers with parts grown together into a tubular, urn-shaped, or globular part. (**E.**)

E. Fruit a capsule with many seeds. **Andrómeda** (p. 249).

E. Fruit fleshy with 10 or more seeds. **Gaylussàcia** and **Vaccínium** (p. 244).

* Flowers white or nearly so. (**F.**)

F. Leaves evergreen. (Thickness and smoothness indicate evergreen character.) (**G.**)

G. Thorny plants; flowers ½ inch or more in size with 5 petals. **Pyracántha** (p. 175). **Ìlex** (p. 86).

G. No thorns. (**H.**)

H. Flowers large, 2–4 inches, often double in Camellia. **Camèllia** (p. 79). **Gordònia** (p. 80).

H. Flowers small, wheel-shaped; fruit white or red berries. **Ardísia** (p. 268). **Ìlex** (p. 86).

H. Flowers small, globular or ovate, 5-lobed; fruit dry. **Andrómeda** (p. 249).

H. Other evergreens hardy only South. **Photínia** (p. 179). **Escallònia** (p. 188). **Árbutus** (p. 249).

F. Leaves deciduous. (**I.**)

- **I**. Flowers large, ½ inch or more. (**J.**)
  - **J**. Flowers usually over 2 inches wide of 5 petals and many stamens. **Stuártia** (p. 80). **Gordònia** (p. 80).
  - **J**. Flowers bell-shaped, ½–1½ inches. **Stŷrax** (p. 270). **Halèsia** (p. 272).
  - **J**. Flowers with long stamens making feathery bloom. **Neviùsia** (p. 171).
  - **J**. Flowers under 2 inches wide of 5 petals. (**K.**)
    - **K**. Fruit fleshy. **Amelánchier** (p. 180). **Cratægus** (p. 173). **Prùnus** (p. 142). **Pŷrus** (p. 182).
    - **K**. Fruit dry. **Spiræa** (p. 146). **Exochórda** (p. 161).
- **I**. Flowers small, under ½ inch wide. (For inconspicuous flowers see next **I**.) (**L.**)
  - **L**. Flowers of 4–9 petals, slightly united at base, and as many stamens; fruit berries. **Ìlex** (p. 86).
  - **L**. Flowers of 5 petals and many stamens, or double. **Spiræa** (p. 146). **Prùnus** (p. 142). **Pŷrus** (p. 182). **Photínia** (p. 179). **Ìtea** (p. 201).
  - **L**. Flowers open bell-shaped. **Zenòbia** (p. 253). **Fothergílla** (p. 203).
  - **L**. Flowers globular, tubular, or urn-shaped. (**M.**)
    - **M**. Fruit a capsule. **Andrómeda** (p. 249).
    - **M**. Fruit berries with 10 or more seeds. **Gaylussàcia** and **Vaccínium** (p. 244).
  - **L**. Other small white flowers on deciduous shrubs. **Ceanòthus** (p. 97). **Clèthra** (p. 265). **Báccharis** (p. 241).
- **I**. Flowers inconspicuous by lack of size or color. **Úlmus** (p. 308). **Rhámnus** (p. 93). **Zízyphus** (p. 99).

Key 7. Leaves alternate, simple with lobed edges.

* Plants without thorns. (**A.**)

- **A**. Leaves with radiate ribs and 3–7 notched lobes. (**B.**)
  - **B**. Fruit fleshy. (**C.**)
    - **C**. Leaves very large, 5 inches or more broad. **Fìcus** (p. 308). **Fátsia** (p. 212).
    - **C**. Leaves smaller; fruit a globular berry under 1 inch. **Ribes** (p. 201).
  - **B**. Fruit dry. (**D.**)
    - **D**. Flowers large, over 2 inches broad. **Hibíscus** (p. 81).
    - **D**. Flowers small, under 1 inch. **Physocárpus** (p. 158).
- **A**. Leaves with radiate ribs and 2–3 unnotched lobes. (**E.**)

E. Leaves with 2 equal lobes. (Found outdoors only South.) Bauhínia (p. 128).
E. Leaves irregularly 2–3-lobed (sometimes without lobes). Sássafras (p. 296).
A. Leaves feather-veined. (**F.**)
F. Some leaves without lobes, all with tapering bases. Báccharis (p. 241).
F. Leaves fern-like with many side notches, aromatic. Comptònia (p. 311).
F. Leaves silver-gray, finely divided, aromatic. Santolìna (p. 243).
F. Leaves triangular, with 5–9 notched lobes. Stephanándra (p. 163).
F. Other thornless shrubs with lobed leaves. Quércus (p. 314). Prùnus (p. 142). Spiræ̀a (p. 146). Bétula (p. 311).
* Plants with more or less thorns or prickles; fruit fleshy berries (Ilex has spiny-edged leaves). Cratæ̀gus (p. 173). Ribes (p. 201). Rùbus (p. 164). Ìlex (p. 86).

Key 8. Leaves alternate, compound.
* Leaves of 3 blades. (**A.**)
A. Plants thorny or prickly. (**B.**)
B. Fruit large, orange-like. Cítrus (p. 86).
B. Fruit pea-like pods. Cýtisus (p. 113).
B. Fruit blackberry-like. Rùbus (p. 164).
B. Fruit 2–5-seeded black rounded berry. Acanthopànax (p. 212).
B. Other prickly plants with 3-bladed leaves. Ròsa (p. 166).
A. Plants without thorns or prickles. (**C**).
C. Flowers pea-shaped. Labúrnum (p. 116). Lespedèza (p. 124).
C. Flowers not pea-shaped, small. (**D.**)
D. Fruit dry but somewhat berry-like in appearance; leaves aromatic. Rhús (p. 107).
D. Fruit flat, wafer-like, ½ inch or more broad. Ptèlea (p. 84).
* Leaves with an even number of blades, abruptly pinnate. (**E.**)
E. Flowers yellow or yellowish. Cássia (p. 128). Caragàna (p. 122).
E. Flowers rosy. Halimodéndron (p. 122).
* Leaves of 5 or 7 blades growing from nearly the same point, palmately compound. (**F.**)
F. Blades entire; flowers yellow, in summer. Potentílla (p. 164).
F. Blades somewhat notched; plant thorny. Acanthopànax (p. 212).
F. Blades irregularly cut. Zanthorhìza (p. 58).
* Leaves once odd-pinnate, blades an odd number. (**G.**)
G. Plants thorny or prickly. (**H.**)

- **H.** Flowers large, 2 inches or more, of 5 petals and many stamens (often double). Ròsa (p. 166).
- **H.** Flowers smaller, white; fruit blackberry- or raspberry-like. Rùbus (p. 164).
- **H.** Flowers pea-shaped; fruit pea-like pods. Robínia (p. 119).
- **H.** Flowers yellow in early spring. Mahònia (p. 66).
- **H.** Flowers inconspicuous; fruit rounded, pepper-like. Zanthóxylum (p. 83).

G. Plants without thorns or prickles. (**I.**)
- **I.** Blades of the leaves entire at edges. (**J.**)
  - **J.** Fruit inflated or swollen pods 2 inches or more long. Colùtea (p. 123).
  - **J.** Fruit usually long pods but not inflated. Robínia (p. 119). Indigòfera (p. 119). Sophòra (p. 111).
  - **J.** Fruit jointed pods. Coronílla (p. 125). Sophòra (p. 111).
  - **J.** Fruit short pods in spike-like clusters. Amórpha (p. 117).
  - **J.** Fruit seed-like in calyx. Potentílla (p. 164).
  - **J.** Fruit berry-like, 2-celled, 2-seeded; flowers yellow. Jásminum (p. 273).
  - **J.** Fruit dry and somewhat berry-like. Rhús (p. 107).
- **I.** Blades irregularly and deeply cut. (**K.**)
  - **K.** Flowers very large, 3–8 inches. Pæònia (p. 57).
  - **K.** Flowers small. Zanthorhìza (p. 58). Rhús (p. 107).
- **I.** Blades regularly twice-serrate. Sorbària (p. 159).
- **I.** Blades regularly once-serrate. Rhús (p. 107). Técoma (p. 285). Xanthocèras (p. 101).

* Leaves 2–3 times pinnate. (**L.**)
- **L.** Leaves very large, 2–4 feet long. (**M.**)
  - **M.** Plant usually very prickly. Aràlia (p. 211).
  - **M.** Plant without prickles. Rhús (p. 107).
- **L.** Leaves smaller, twice-abruptly-pinnate. Albízzia (p. 131). Acàcia (p. 132). Cæsalpínia (p. 129).
- **L.** Leaves odd-pinnate, finely divided, fern-like. Grevíllea (p. 306). Sorbària (p. 159). Rhús (107).

* Leaves divided into threes 2 or 3 times with 9–27 blades. (**N.**)
- **N.** Blades notched; plants hardly woody. Astílbe (p. 160). Arúncus (p. 161).
- **N.** Blades entire. Woody evergreen plant of the extreme South. Nandìna (p. 67).

Key 9. Leaves small, generally ½ inch or less long, all leaves under an inch long (except on the last, below, which is a shrubby pine with leaves needle-shaped and sometimes over 2 inches long).

* Leaves alternate with entire edges (sometimes very crowded but never truly opposite or whorled). (**A.**)
  - **A.** Leaves thick and fully or nearly evergreen. (**B.**)
    - **B.** Leaves with rolled edges. **Lèdum** (p. 263). **Leiophýllum** (p. 263).
    - **B.** Leaves without rolled edges. (**C.**)
      - **C.** Leaves needle-shaped and 4-angled. **Pìcea** (p. 326).
      - **C.** Leaves linear, sharp-pointed, green below. **Táxus** (p. 341).
      - **C.** Leaves linear, blunt, with white lines below. **Tsùga** (p. 326).
      - **C.** Leaves broad at base, ovate, pointed; twigs green. (South.) **Rúscus** (p. 323).
      - **C.** Leaves very hairy; flowers cup-shaped with 10 stamens in dents. **Kálmia** (p. 256).
      - **C.** Other evergreens with small alternate entire-edged leaves. (**D.**)
        - **D.** Flowers tubular with 4 spreading lobes. **Dáphne** (p. 298).
        - **D.** Flowers bell-shaped, 4-lobed in drooping clusters. **Erìca** (p. 254).
        - **D.** Flowers small, peculiar, in erect clusters. **Ceanòthus** (p. 97).
  - **A.** Leaves thinner and not evergreen. (**E.**)
    - **E.** Flowers yellow, pea-shaped; twigs green. **Genísta** (p. 114).
    - **E.** Flowers regular of 5 separate petals. **Spiræa** (p. 146).
    - **E.** Flowers generally pink in very small clusters; leaves minute, clasping the stem at base on thread-like twigs. **Támarix** (p. 73).
* Leaves alternate with notched edges. (**F.**)
  - **F.** Leaves whitish or silvery-gray, much divided into lobes; plant aromatic. **Santolìna** (p. 243).
  - **F.** Other shrubs with notched, small leaves. **Spiræa** (p. 146). **Ìlex crenàta** (p. 88).
* Leaves opposite, thick, and evergreen (including scale-like leaves covering the stem). (**G.**)
  - **G.** Leaves linear and sharp-pointed. **Juníperus** (p. 337).
  - **G.** Leaves oval and about flat. **Búxus** (p. 306). **Ceanòthus** (p. 97).
  - **G.** Leaves oval with rolled edges. **Leiophýllum** (p. 263).
  - **G.** Leaves very small, ¼ inch or less, and pressed to the stem which they practically cover. (**H.**)
    - **H.** Flowers yellow, May–July. **Hudsònia** (p. 72).
    - **H.** Flowers pink or white, July–September. **Erìca** (p. 254). **Callùna** (p. 255).
    - **H.** Flowers inconspicuous; fruit a cone. **Thùja** (p. 328).
* Leaves opposite and not fully evergreen. **Lonícera** (p. 230).
* Leaves whorled on the stem. (**I.**)

I. Leaves ½ inch long and sharp-pointed, evergreen. Juníperus (p. 337).
I. Leaves much smaller. Erìca (p. 254).
* Leaves evergreen in clusters along the sides of the stem, needle-shaped. Pìnus (p. 324).

Key 10. Key to those deciduous bushes which have flowers during the fall, winter, and spring, when the stems are bare of foliage. The arrangement of the leaves is easily determined by their scars.

* Flowers regular, not lopsided, on alternate leaved bushes. (**A.**)
- **A.** Corolla united at base. (In Daphne and Dirca this is a calyx.) (**B.**)
  - **B.** Flower with tubular portion and a 4-lobed border. Dáphne (p. 298). Dírca (p. 297).
  - **B.** Flower with a 5-lobed edge. (Azàlea is sometimes double.) (**C.**)
    - **C.** Flowers small, white or pinkish, urn-shaped. Vaccínium (p. 244).
    - **C.** Flowers large, 1 inch, funnel-shaped. Azàlea (p. 257).
- **A.** Corolla with separate petals. (Sometimes these pieces are in reality calyx.) (**D.**)
  - **D.** Flowers yellow, small, in clusters, 6 parts. Benzòin (p. 297). Sássafras (p. 296).
  - **D.** Flowers (1 inch) with 4 slender yellow petals. Hamamèlis (p. 202).
  - **D.** Flowers with 5 yellow petals. Corylópsis (p. 204).
  - **D.** Flowers large, 1–6 inches, with 6 or more thick petals. Magnòlia (p. 58).
  - **D.** Flowers ⅛–1 inch with 5 white or pinkish petals (sometimes double). Prùnus (p. 142). Spiræ̀a (p. 146).
  - **D.** Flowers ½–1½ inches with 6 brownish petals. Asímina (p. 64).
  - **D.** Flowers very small, ⅛ inch, pink in clusters, with 4 or 5 petals. Támarix (p. 73).

* Flowers irregular or lopsided, red or purplish, pea-shaped on alternate-leaved bushes. Cércis (p. 127).

* Flowers regular on opposite-leaved bushes. (**E.**)
- **E.** Flowers yellow, bell-shaped (1 inch long) with 4-lobed border. Forsýthia (p. 274).
- **E.** Flowers yellow, small in clusters with 4 separate petals. Córnus Más (p. 216).
- **E.** Flowers large, 1 inch, yellow with a tubular corolla having 5-lobed border; stem green and 4-angled. Jásminum (p. 273).
- **E.** Flowers large, 1 inch, yellowish brown, with many thick sweet-scented petals. Calycánthus (p. 186).

E. Flowers very large, 2–4 inches, white or pink with 4 petals, in reality bracts around a head of small flowers. **Córnus flórida** (p. 214).

* Flowers small, white or pinkish, somewhat irregular in pairs on opposite-leaved bushes. **Lonícera** (p. 230).

* Flowers in slender catkins. **Alnus** (p. 312). **Sàlix** (p. 314). **Bétula** (p. 311). **Córylus** (p. 313). **Quércus** (p. 314).

Key 11. Key to those deciduous bushes which have conspicuous fruit during the fall and more or less of the winter when bare of foliage. The arrangement of the leaves is easily determined by their scars. The numbers refer to the pages.

* Alternate-leaved bushes with fleshy, usually orange, or red berries. (**A.**)

A. Plants without thorns or spines. **Ìlex** (p. 86). **Cotoneáster** (p. 174). **Pỳrus** (p. 182). **Photínia** (p. 179).

A. Plants more or less thorny. **Bérberis** (p. 64). **Lýcium** (p. 284).

* Alternate-leaved bushes with dry fruits. (**B.**)

B. Fruit rounded and apparently berry-like. (**C.**)

C. Plant without spines or thorns; berries in clusters. **Rhús** (p. 107).

C. Plant with spines or thorns; berry-like fruit more scattered. **Ròsa** (p. 166).

B. Fruit flat or wafer-like(½ inch broad). **Ptèlea** (p. 84).

B. Fruit a capsule, more or less 5-lobed and always 5-celled. (**D.**)

D. Fruit large, 1 inch long. **Hibíscus** (p. 81).

D. Fruit nearly ½ inch long, 5-seeded. **Exochórda** (p. 161).

D. Fruit smaller and many-seeded. **Spiræ̀a** (p. 146). **Physocárpus** (p. 158).

B. Fruit a capsule, 3-lobed and 3-celled. (**E.**)

E. Capsule 3-seeded and splitting into 3 nutlets. **Ceanòthus** (p. 97).

E. Capsule many-seeded, 3-angled. **Clèthra** (p. 265).

B. Capsule woody, ½ inch long, 2-celled, 2-seeded. **Hamamèlis** (p. 202). **Corylópsis** (p. 204).

B. Fruits hairy clustered, much like silky white brushes. **Báccharis** (p. 241).

* Opposite-leaved bushes with fleshy berries. (**F.**)

F. Drupes with 1 more or less flattened seed. **Vibúrnum** (p. 219). **Córnus** (p. 214).

F. Berries 2-seeded, in close clusters along the branches. **Symphoricárpos** (p. 228).

* Opposite-leaved bushes with dry fruits. (**G.**)

G. Fruit large, over 1 inch long, pear-shaped with many brown seeds. **Calycánthus** (p. 186).

G. Fruit long, several inches, pods with winged seeds. Catálpa (p. 286). Chilópsis (p. 286).
G. Fruit ¼ inch long with 2 valves and few seeds. Syrínga (p. 275).
G. Fruit apparently 4 shining black beads in calyx. Rhodotỳpos (p. 163).
G. Fruit a capsule, when open in the fall, showing bright red seeds. Euónymus (p. 91).
G. Fruit broadly 2-winged. Àcer (p. 103).
G. Fruit about hemispheric in shape with many seeds. Deùtzia (p. 191). Philadélphus (p. 196).

Key 12. Thorny plants. Plants with spines or thorns on their stems, or spiny-edged leaves, or plants with apparently no leaves, as the cacti.

* Plants with simple leaves. (**A.**)
A. Leaves covered with silvery scales on one or both sides. Elæágnus (p. 300). Hippóphaë (p. 303). Shephérdia (p. 303).
A. Leaves without silvery scales. (**B.**)
B. Leaves with entire edges, neither notched nor lobed. (**C.**)
C. Leaves small, round, fleshy, later falling off. Opúntia (p. 209).
C. Leaves alternately arranged on the stem. Maclùra (p. 310). Rúscus (p. 323). Acàcia (p. 132).
C. Leaves in alternate clusters on the stem. Bérberis (p. 64). Lýcium (p. 284). Bumèlia (p. 269).
C. Leaves opposite. Rhámnus (p. 93). Osmánthus (p. 282).
B. Leaves with notched, but not lobed edges. (**D.**)
D. Leaves alternately arranged on the stem. Ìlex (spiny edges to leaves) (p. 86). Zízyphus (p. 99). Prùnus (p. 142). Cratæ̀gus (p. 173). Pỳrus (p. 182).
D. Leaves usually in alternate clusters. Bérberis (p. 64).
D. Leaves opposite. Clerodéndron (p. 291). Rhámnus (p. 93). Osmánthus (p. 282).
B. Leaves with lobed edges. Rìbes (p. 201). Cratæ̀gus (p. 173).

* Plants with compound leaves. (**E.**)
E. Leaves once-odd-pinnate. Robínia (p. 119). Zanthóxylum (p. 83). Mahònia (p. 66). (Zízyphus is only apparently pinnate.)
E. Leaves abruptly (evenly) pinnate. Halimodéndron (p. 122). Caragàna (p. 122).
E. Leaves of 3, 5, or 7 blades. Cítrus (p. 86). Rùbus (p. 164). Acanthopànax (p. 212).
E. Leaves more than once-pinnate. Acàcia (p. 132). Aràlia (p. 211). Cæsalpínia (p. 129).

* Plants without leaves. Opúntia (p. 209). Mamillària (p. 211). Phyllocáctus (p. 211). Ùlex (p. 113).

PART III

DESCRIPTIONS OF THE SHRUBS

Numbers in parenthesis in the keys and descriptions which follow refer to the figures. Bracketed information refers to methods of propagation.

Pæònia. The Peonies form one of the most popular groups of plants. They are almost entirely large-flowered herbaceous perennials, though one species is shrubby and, therefore, to be included in our book. This is called TREE PEONY Figs. (1) and (2) — Pæonia Moutàn, — growing to the height of 3 to 8 feet with large alternate smooth pale-colored feather-divided (pinnate) leaves with irregularly cut and notched blades, as shown in the illustrations. The flowers are six or more inches broad, often double and of many colors — white, pink, rose, sometimes blotched and striped. One variety of this, the POPPY PEONY — papaveràcea, — is white with a dark red center and has thin poppy-like petals. The fruit in the single

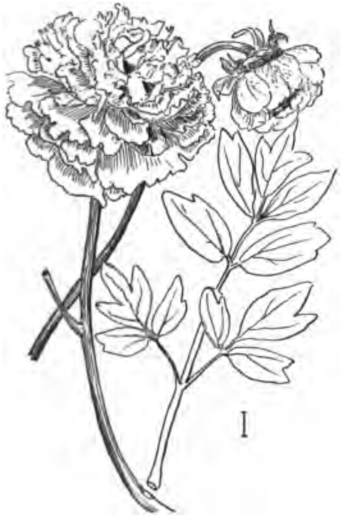


FIG. 1. — Tree Peony.

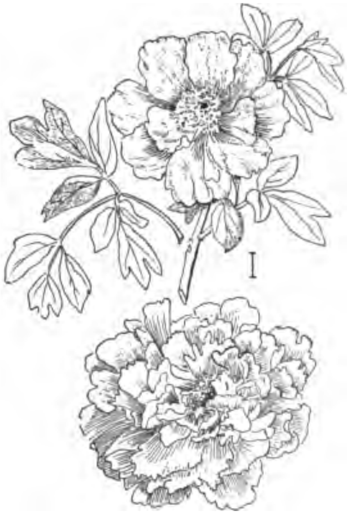


FIG. 2. — Tree Peony.

varieties is a cluster of large-seeded leathery hairy pods. The double forms of this, as well as all other fully double flowers, do not produce fruit. This shrubby peony is not so popular in America as many herbaceous forms, though in China, its native country, there are hundreds of named varieties. [Divisions; seeds (slow-sprouting).]

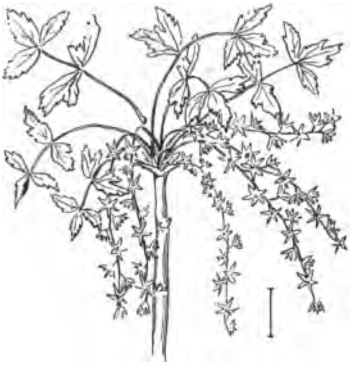


FIG. 3. — Shrub Yellow-root.

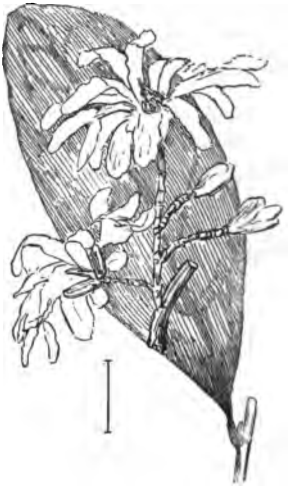


FIG. 4. — Star Magnolia.

Zanthorhìza. SHRUB YELLOW-ROOT (3) — Zanthorhiza apiifòlia — is a low shrubby plant (1–2 feet) sometimes cultivated for the handsome compound leaves with three to many cut and lobed blades, which are clustered at the top of the short, erect, woody stem. The flowers and fruit are small and sessile on long drooping stems. The flowers are brownish in April to May; the fruit is somewhat inflated 1- to 2-seeded yellow pods. [Seeds; root cuttings.]

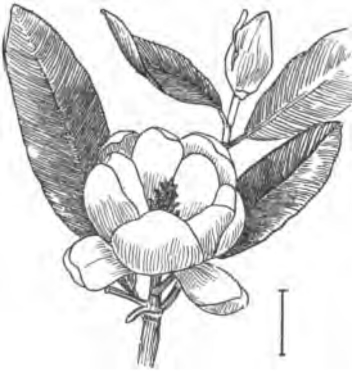


FIG. 5. — Swamp Magnolia.

Magnòlia. The MAGNOLIAS form a genus of about 20 species of hardy trees unsurpassed in the size and beauty of leaf and flower. While most of the species are tree-like in form and size, still along the northern limit of the growth of several species they are apt to be dwarfed into shrubby forms and so are included here. One species, STAR MAGNOLIA (4) — Magnolia stellàta, — from Japan, is practically always shrubby and blooms very early in the season with white sweet-scented flowers about 3 inches broad; these last longer and are more abundant

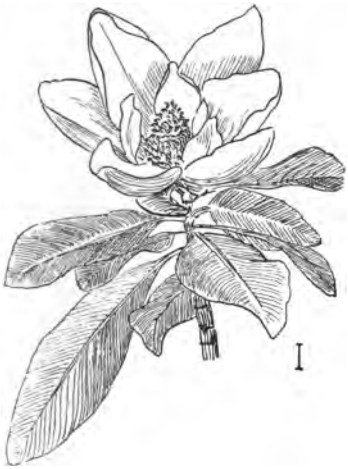


FIG. 6. — Evergreen Magnolia.

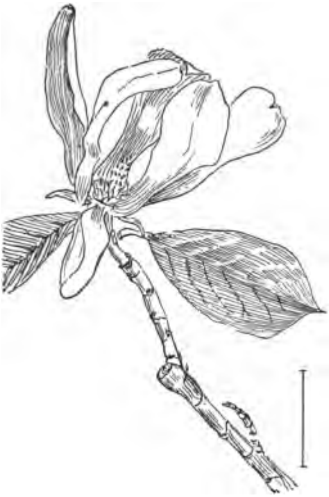


FIG. 7. — Kobus Magnolia.

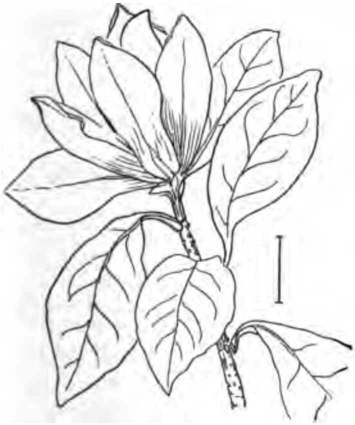


FIG. 8. — Purple Magnolia.

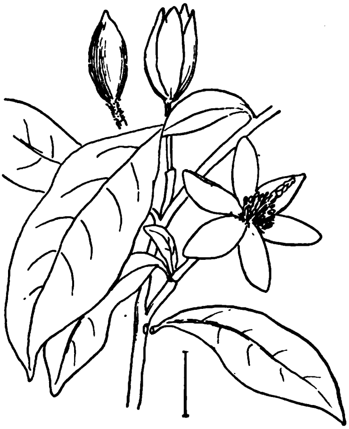


FIG. 9. — Banana Shrub.

than those on most of the species. The petals are narrow and about 15 in number.

The species of magnolias from eastern Asia generally bloom before the leaves expand in spring and have deciduous leaves. The American species bloom in the summer and are generally deciduous, though two species are evergreen. These are, SMALL or SWAMP MAGNOLIA (5) — Magnolia virginiana (M. glaùca) — which is found wild north to Massachusetts and is hardy in sheltered positions in southern Canada though not fully evergreen in northern positions; and EVERGREEN MAGNOLIA (6) — Magnolia grandiflòra — which, if protected from the north winds, can be successfully grown in southern New York. All the Magnolias form cone-like fruits, usually pink or red when ripe, from which the ripened scarlet-coated seeds hang out on slender threads.

The following key will enable one to determine the species of most if not all of the forms. In the key all the species are included, though some of them are always tree-like. [Fresh seeds; layers.]

KEY TO THE MAGNOLIAS

* Blooming before the deciduous leaves expand. (**A.**)
  A. Flowers pure white or slightly pinkish. (**B.**)
    B. Flowers bell-like in form. CHINESE WHITE MAGNOLIA or YULAN MAGNOLIA — Magnolia conspícua (M. Yulan).
    B. Flowers broadly spreading. (**C**).
      C. Petals only 6. KOBUS MAGNOLIA (7) — Magnolia Kòbus.
      C. Petals narrow, 9–18. STAR MAGNOLIA or HALL'S JAPAN MAGNOLIA (4) — Magnolia stellàta.
  A. Flowers pink to purple outside. (**D.**)
    D. Flowers larger, 6–8 inches broad. (**E.**)
      E. Hardy north to New York. SOULANGE'S MAGNOLIA — Magnolia Soulangeàna.
      E. Hardy only south. CAMPBELL'S MAGNOLIA — Magnolia Cámpbelli.
    D. Flowers small, 3–4 inches broad. PURPLE MAGNOLIA (8) — Magnolia purpùrea (M. obovàta).
* Blooming after the new leaves expand (some are evergreen). (**F.**)
  F. Flowers greenish; tall tree. CUCUMBER TREE — Magnolia acuminàta.
  F. Flowers white with conspicuous colored mark in center. (**G.**)
    G. Petals purple-spotted at base. GREAT-LEAVED MAGNOLIA or LARGE-LEAVED CUCUMBER TREE — Magnolia macrophýlla.
    G. Stamens with scarlet filaments. (**H.**)

H. Leaves clustered at ends of branches. JAPANESE UMBRELLA MAGNOLIA — Magnolia hypoleùca.

H. Leaves scattered along the branches. WATSON'S MAGNOLIA — Magnolia Wátsoni.

F. Flowers pure white (slightly greenish in pùmila). (**I.**)

I. Flowers 1–3 inches broad. (**J.**)

J. Shrub or tree 10 feet or more high. SMALL or SWAMP MAGNOLIA or SWEET 'BAY' (5) — Magnolia virginiana (M. glaùca).

J. Shrub less than 10 feet high. BUSH MAGNOLIA — Magnolia pùmila.

I. Flowers 6–9 inches broad. (**K.**)

K. Leaves evergreen. EVERGREEN MAGNOLIA (6) or BULL 'BAY' — Magnolia grandiflòra.

K. Leaves deciduous. (**L.**)

L. Leaves eared at base. EAR-LEAVED UMBRELLA TREE — Magnolia Fràseri.

L. Leaves tapering at base. UMBRELLA TREE — Magnolia tripétala.

F. Flowers yellowish brown, small; leaves evergreen. BROWN-FLOWERED MAGNOLIA or BANANA SHRUB (9) — Magnolia (Michèlia) fuscàta.

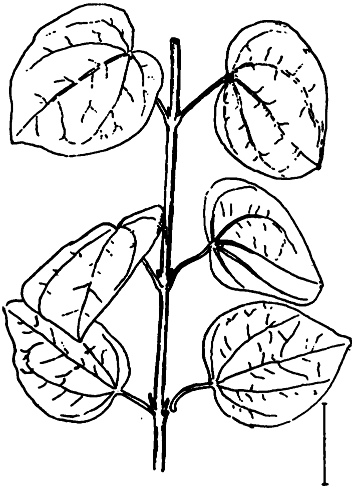


FIG. 10. — Cercidiphyllum.

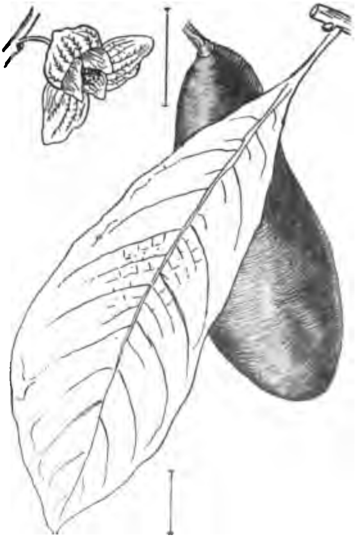


FIG. 11. — North American Papaw.

Cercidiphýllum japónicum. CERCIDIPHYLLUM (10). This is a bushy tree of great beauty and strange arrangement of foliage but with inconspicuous flowers and fruit. The leaves are generally opposite, heart-shaped, and with about 5 basal ribs. The great peculiarity of the leaves is the fact, unique so far as I know, that every year for many years the single leaves come out just where last year's leaves were, instead of the usual branches appearing, and so the stems have along their whole extent fresh leaves till they reach the diameter of an inch or more. Height usually 20 to 30 feet, slender smooth branches with leaves 2 to 3 inches long. Perfectly hardy throughout. From Japan. [Seeds; twig cuttings; layers.]

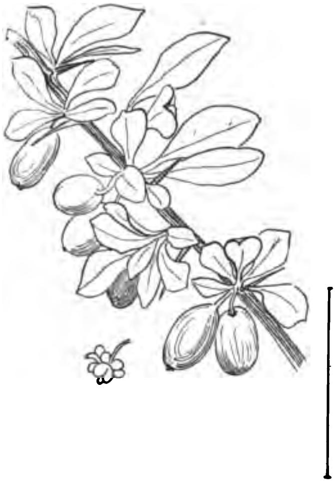


FIG. 12. — Thunberg's Japanese Barberry.

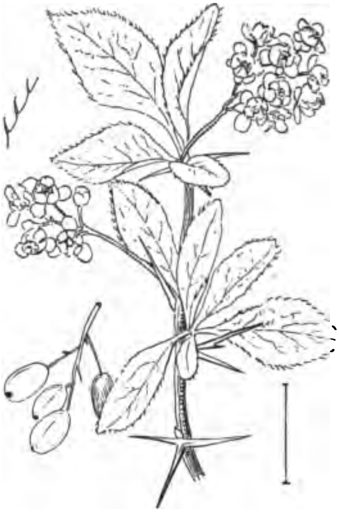


FIG. 13. — Common Barberry.

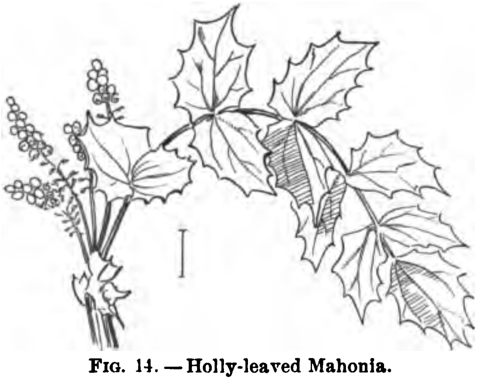


FIG. 14. — Holly-leaved Mahonia.

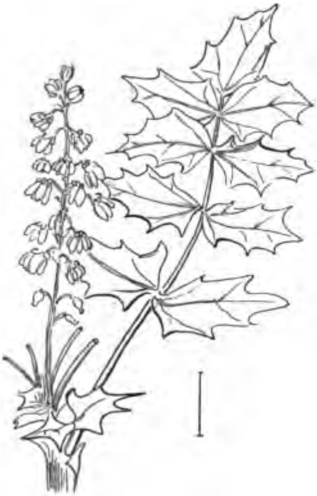


FIG. 15. — Japan Mahonia.

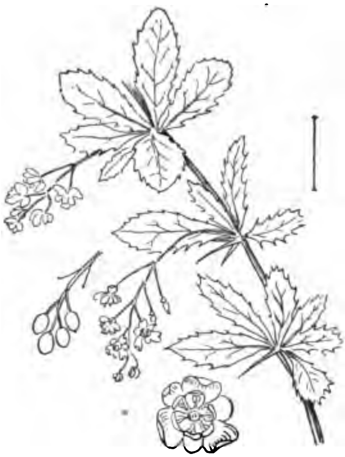


FIG. 16. — American Barberry.

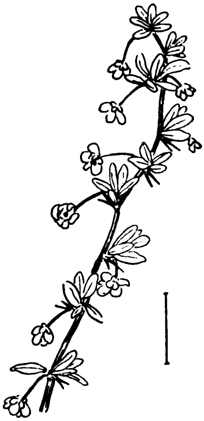


FIG. 17. — Box-leaved Barberry.

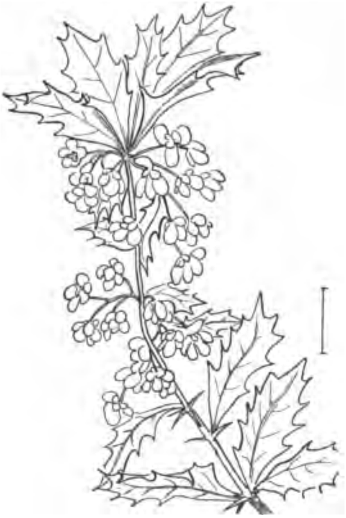


FIG. 18. — Holly-leaved Barberry.

Asímina. The PAPAWS, as the name is used in America, are shrubs or small-trees with large smooth alternate entire-edged leaves, and large-seeded pulpy fruit. The large purple or whitish flowers are solitary and axillary, appearing with or before the leaves expand in spring. The flowers consist of three calyx pieces, six petals, and numerous stamens. There are two species in cultivation. One, a shrubby tree 10 to 40 feet high, hardy in Massachusetts, with leaves 6 to 12 inches long, and edible fruit, 2 to 6 inches long, of a brown color when ripe in October, COMMON or NORTH AMERICAN PAPAW (11) — Asimina tríloba. The other is a shrub 2 to 6 feet high, hardy only South, with leaves 2 to 4 inches long and cream-colored flowers having petals 2 inches long, FETID SHRUB — Asimina grandiflòra. (The Papaws of the books are milky-juiced small tropic trees of palm-like habit with variously lobed leaves, belonging to the passion flower family.) [Seeds; layers; root cuttings.]

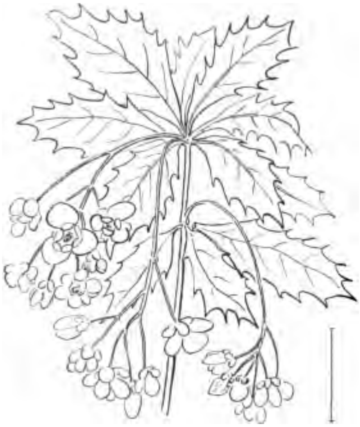


FIG. 19. — Bearded Barberry.

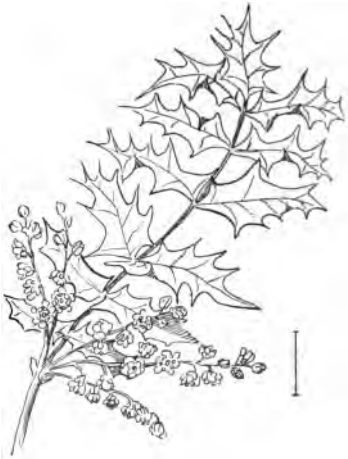


FIG. 20. — Mahonia.

Bérberis. The BARBERRIES are popular, hardy, usually thorny shrubs, having yellow- to orange-colored flowers, and white, yellow, red to black berries with 1 to several seeds. The leaves are generally arranged in close clusters above the 1–3-pointed thorns. The barberries with compound leaves are here, as in the nurseries, called MAHONIAS. The species are so numerous (over 50), with many hybrids and varieties, that the average reader will be satisfied to distinguish only the few in general cultivation.

THUNBERG'S JAPANESE BARBERRY (12) — Berberis Thunbérgii, — is a dense spreading shrub 2 to 4 feet high with small entire-edged leaves ½ to 1½ inches long and usually simple spines (occasionally 3-branched). The branches are deeply grooved. The pale yellow flowers are in small umbel-like clusters, and the bright red fruit is nearly globular.

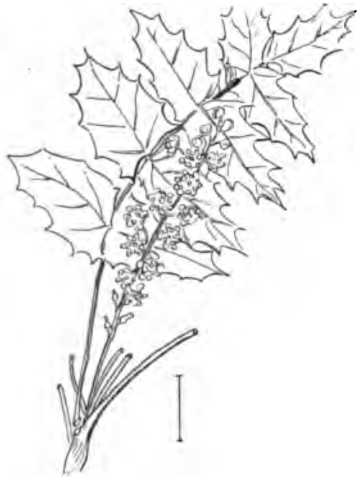


Fig. 21. — Ash Mahonia.

European or Common Barberry (13) — Berberis vulgàris — grows from 4 to 8 feet high with erect or somewhat arching gray grooved branches. The leaves are 1 to 2 inches long with notched and somewhat spiny edges. The flowers are bright yellow in many-flowered hanging clusters. The fruit, in the different varieties, are white, yellow, red to dark purple berries which hang on and add beauty to the bushes all winter. There is a variety of this frequently cultivated, with purple leaves, which hold their color through the season, atropurpùrea.

The Holly-leaved Mahonias have holly-edged but compound evergreen leaves, erect clusters of yellow flowers, and blue to black small berries. The Mahonias are hardy north of Philadelphia only in sheltered positions.

American or Holly-leaved Mahonia (14) — Mahonia (Berberis) Aquifòlium — differs from Japan Mahonia (15) — Mahonia japónica — in having fewer blades but a longer stem to the compound leaf: American blades 5 to 9; Japan, 9 to 13.

The use of the following key will enable the reader to determine a few additional species. [Fresh seeds; twig cuttings; layers.]

KEY TO THE BARBERRIES WITH SIMPLE LEAVES

* Leaves thin, deciduous, notched, in clusters above thorns; leaf-notches hair-tipped. (**A.**)

A. Branches gray and grooved; flowers yellow in elongated racemes, May and June. Many varieties of European or Common Barberry (13) — Berberis vulgàris.

A. Branches purplish and grooved; leaves purple. Berberis vulgaris atropurpùrea.

A. Branches reddish brown or brown; fruit coral-red. AMERICAN BARBERRY (16) — Berberis canadénsis.

* Leaves thin, deciduous, usually without notches.

B. Branches reddish brown; flowers orange-yellow in racemes; fruit dark blue. (**C.**)

C. Flowers and fruit pendulous. TURKESTAN BARBERRY — Berberis heterópoda.

C. Flowers and fruit erect. PERSIAN BARBERRY — Berberis integérrima.

B. Branches brown, grooved; flowers pale yellow, nearly solitary (1–3); fruit bright red; leaves small (½–1½ inches long), spatulate; low dense shrub, 2–4 feet. THUNBERG'S JAPANESE BARBERRY (12) — Berberis Thunbérgii.

* Leaves thick, small (½–1 inch long), usually entire and about evergreen. (**D.**)

D. Flowers solitary on long stems, orange; fruit blackish purple. BOX-LEAVED BARBERRY (17) — Berberis buxifòlia.

D. Flowers (2–6) in umbels; leaves with rolled edges, small (½–1¼ inches). SMALL-LEAVED BARBERRY — Berberis stenophýlla.

* Leaves holly-like, spiny-toothed. (**E.**)

E. Flowers in simple racemes, orange-yellow. HOLLY-LEAVED BARBERRY (18) — Berberis ilicifòlia.

E. Flowers in compound racemes. (**F.**)

F. Leaves with many spiny teeth. BEARDED BARBERRY (19) — Berberis aristàta.

F. Leaves with few large strong spines. JAMESON'S BARBERRY — Berberis Jàmesoni.

KEY TO THE BARBERRIES WITH COMPOUND EVERGREEN LEAVES. — MAHONIA.

* Leaves almost without stalk below the blades. (**A.**)

A. Blades 3–7, thick, dull and whitish. FREMONT'S MAHONIA — Mahonia Frèmonti.

A. Blades 5–17, thick, dark green, shiny, with few teeth; height 2–3 feet. MAHONIA (20) — Mahonia pinnàta.

A. Blades 9–13, large (2–5 inches long); height 5–10 feet. JAPAN MAHONIA (15) — Mahonia japónica.

A. Blades 5–25, smaller, rigid with fewer teeth; height 4–6 feet. NEPAUL MAHONIA — Mahonia nepalénsis.

* Leaves decidedly stalked below the blades. (**B.**)

B. Blades rounded or square at base. (**C.**)

C. Blades 5–9, shiny dark green above with many teeth; height 3–6 feet. Holly-leaved Mahonia (14) — Mahonia Aquifòlium.

C. Blades 11–21, with 3–5 basal ribs and few teeth; low. Ash Mahonia (21) — Mahonia nervòsa.

C. Blades 3–7, dull, pale; low, almost creeping, 1–2 feet high. Trailing Mahonia — Mahonia rèpens (Berberis Aquifòlium).

B. Blades 5–9, tapering at base with many spiny teeth; low. Fortune's Mahonia. Mahonia Fortùnei.

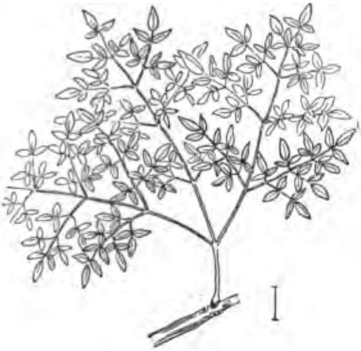


Fig. 22. — Japanese Nandina.

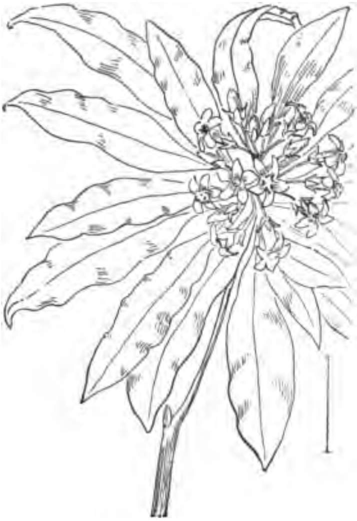


Fig. 23. — Wavy-leaved Pittosporum.

The tall barberries in cultivation North are generally varieties of Berberis vulgaris and the names often indicate peculiarities of foliage or fruit: atropurpùrea, purple-leaved; álba, white-fruited; lùtea, yellow-fruited; nìgra, black-fruited; aspérma, seedless; violàcea, violet-fruited; dúlcis, not sour; mìtis, with few thorns; etc. The low ones are apt to be varieties of Berberis Thunbergii, which are especially valuable for the borders of walks and drives and grow well in partial shade.

Nandìna doméstica. Japanese Nandina (22) is a reed-like upright shrub (6–8 feet) with bare stems ½ inch in diameter and clusters of evergreen leaves at the top ending in a cluster of small red berries the size of peas. The compound leaves are two or three times ternate with 9 to 27 entire-edged blades. It is frequent in cultivation in southern California for the beautiful foliage and bright berries, but the bare stems are unsightly if exposed. Among other shrubs and somewhat in the shade it is a fine plant. With some protection hardy to Washington. The

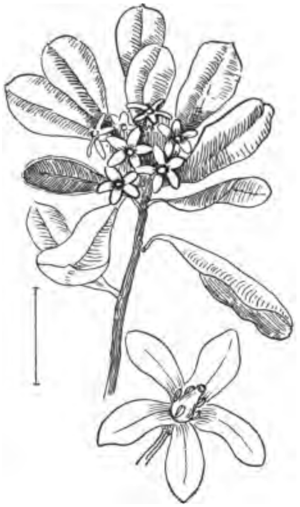


Fig. 24. — Tobira Pittosporum.

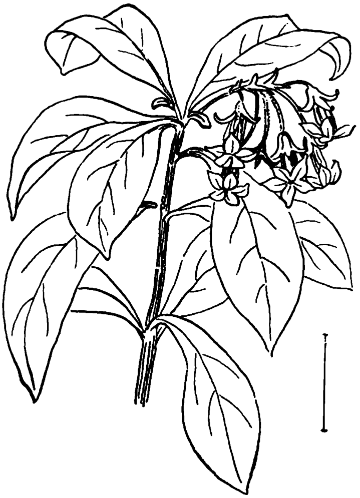


Fig. 25. — Pittosporum.

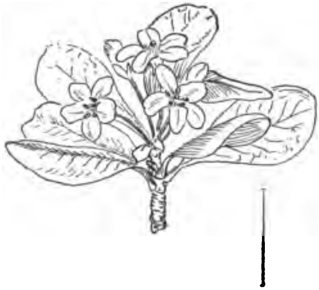


Fig. 26. — Cape Pittosporum.

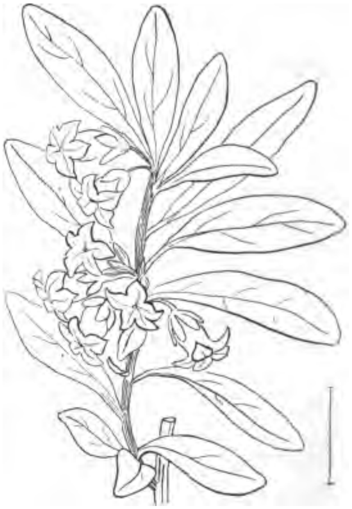


Fig. 27. — Karo Pittosporum.

flowers are insignificant; the seeds are peculiar in that they are concave on one side and convex on the other. [Seeds and divisions.]

Pittósporum. The Pittosporums are evergreen trees or shrubs of warm regions. The leaves are alternate but clustered in an apparent whorl at the ends of the branches; the margins are in most species entire. The regular 5-parted flowers form a cluster above the whorl of leaves in spring. The fruit is a globular woody capsule with 2 to many seeds. [Seeds; twig cuttings.]

KEY TO THE PITTOSPORUMS

* Flowers white or nearly so. (**A.**)

A. Flowers very fragrant at night, ½ inch long; leaves a rich deep green, lanceolate, often undulated at the margin; seeds numerous in the ¼-inch pod. Wavy-leaved Pittosporum or Mock Orange (23) — Pittosporum undulàtum.

A. Flowers slightly yellowish with narrow petals, February, March; leaves silky-white when young; seeds 4. Madras Pittosporum — Pittosporum tetraspérmum.

A. Flowers pure white and fragrant, ½ inch broad, in winter; leaves broad towards tip and blunt, dark above, pale below (sometimes variegated.) Common Pittosporum or Tobira (24) — Pittosporum Tobìra.

* Flowers some shade of yellow. (**B.**)

B. Plants clothed with rusty hairs; leaves about 3 inches long and half as wide; flowers ½ inch long, yellow, February to April. Pittosporum (25) — Pittosporum revolùtum.

B. Plants smooth throughout. (**C.**)

C. Small tree or large shrub with weeping twigs; leaves 2–4 inches long with hooked point. Pittosporum phillyræoìdes.

C. Shrub 6 feet high; leaves broad towards tip; flowers clustered, greenish yellow, jasmine-scented. Cape Pittosporum (26) — Pittosporum viridiflòrum.

* Flowers almost black and seeds black; used in California as windbreaks and hedges. (**D.**)

D. Leaves pale and glaucous below, 2–3 inches long and blunt at tip; a pyramidal tall shrub or tree. Karo (27) — Pittosporum crassifòlium.

D. Leaves thin, dull green, 1½–2 inches long and pointed at tip; tree-like. Tawhiwhi — Pittosporum tenuifòlium.

Heliánthemum. The Rockrose — Helianthemum Chamæcístus — and the Frostweed (28) — Helianthemum canadénse — are beautiful rockwork plants with usually bright yellow flowers an inch or more in diameter. Some varieties have red or copper-colored blossoms and some are double. The leaves are linear, hairy above and whitish beneath and generally alternate except at base. The plant commonly cultivated, Helianthemum Chamæcistus, grows in procumbent mats less than a foot high and the 5-petaled flowers are in nodding racemes with hairy stems. The

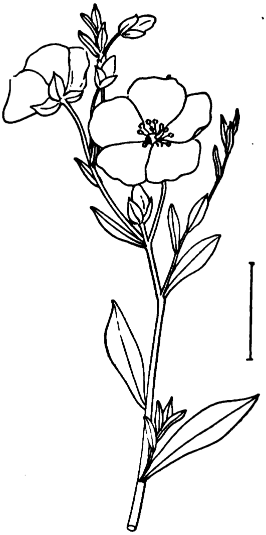


FIG. 28. — Frostweed.

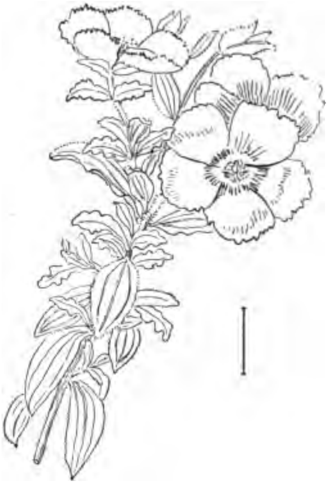


FIG. 29. — Undulate-leaved Rockrose.

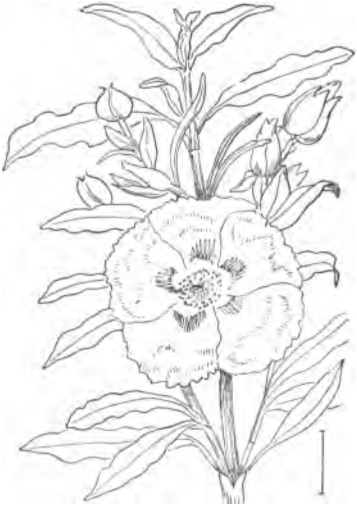


FIG. 30. — Cyprus Rockrose.

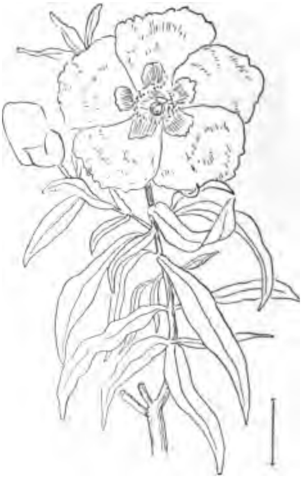


FIG. 31. — Gum Cistus.

fruit is a more or less 3-celled capsule with numerous seeds. These plants are sometimes called Sun 'Roses' because the flowers open only in sunshine and soon drop their petals. [Divisions; seeds; twig cuttings.]

Cístus. These are also called Rockroses. They are aromatic shrubs having all parts covered with short or long usually glandular hairs. The leaves are opposite, simple, mostly evergreen and entire-edged. The flowers are large, rose-like, white to purple and usually clustered. The fruit is a dry many-seeded capsule splitting into 5 valves when ripe. These plants are fully hardy only in the Gulf states and are rarely cultivated even there.

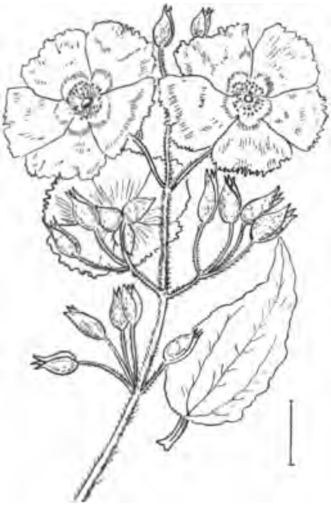


Fig. 32. — Laurel-leaved Cistus.

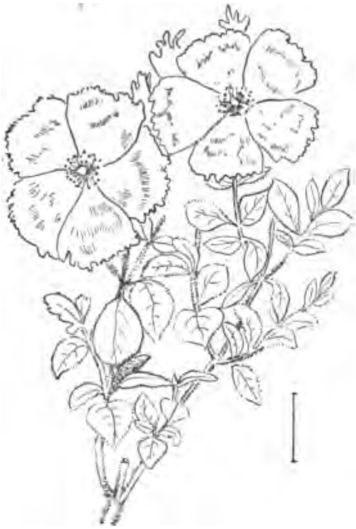


Fig. 33. — Hairy Cistus.

KEY TO THE SPECIES OF CISTUS

* Leaves 3-ribbed. (**A.**)

A. Compact shrub to 2 feet; leaves narrow, rough above, hairy below; flowers deep rose-color, nearly 2 inches wide, 3–4 in a cluster with short stalks. June to August. Undulate-leaved Rockrose (29) — Cistus críspus.

A. Erect glutinous shrub to 6 feet; leaves smooth above and very hairy below; flowers white blotched with purple, nearly 3 inches wide, 5–7 in a cluster. June. CYPRUS ROCKROSE (30) — Cistus cýprius.

A. Glutinous shrub to 4 feet; flowers with yellow center (in var. maculàtus dark crimson), 3–4 inches wide, usually solitary, June. GUM CISTUS (31) — Cistus ladaníferus.

A. Shrub to 6 feet; leaves 1–2½ inches long, whitish or brownish below; flowers yellow-blotched, 2–3 inches wide, 3–8 in a cluster. June to August. The hardiest species. LAUREL-LEAVED CISTUS (32) — Cistus laurifòlius.

* Leaves feather-veined; flowers 1½–2 inches wide. Shrub 3–4 feet; leaves rough above and very velvety below, 1–2 inches long; flowers purple or red usually on long stems, 1–3 in a cluster. May, June. A variable species with many named forms. HAIRY CISTUS (33) — Cistus villòsus. [Seeds.]

Hudsònia. The HUDSONIAS are hardy evergreen shrubs 1 foot high with small awl-shaped heath-like leaves. The flowers are small, yellow, abundant, blooming from May to July. These plants are so difficult to keep in health that they are seldom found in cultivation, though wild in sandy coast regions from Maine to Virginia.

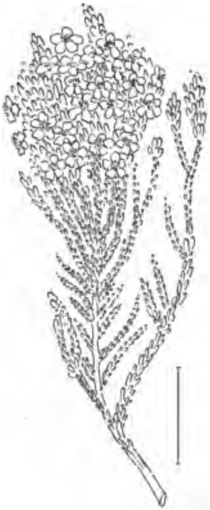


FIG. 34. — Woolly Hudsonia.

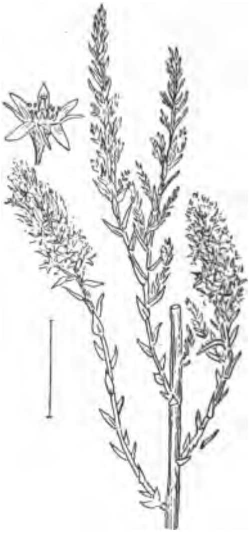


FIG. 35. — German Tamarisk.

The two species are HEATH-LIKE HUDSONIA — Hudsonia ericoìdes, — with greenish leaves and the flowers on slender naked stalks, and WOOLLY HUDSONIA OR FALSE HEATHER (34) — Hudsonia tomentòsa, — with whitish leaves and nearly sessile flowers. [Layers; twig cuttings.]

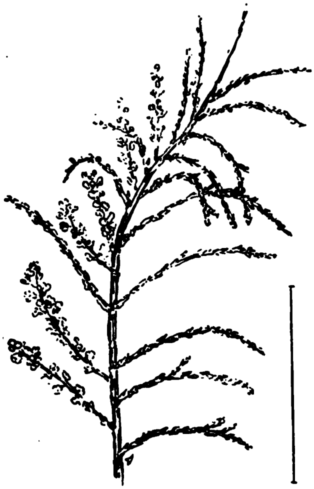


FIG. 36. — African Tamarisk.

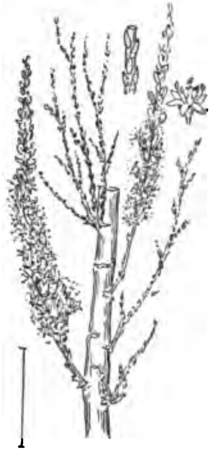


FIG. 37. — French Tamarisk.

Tàmarix. The TAMARISKS are beautiful shrubs with minute scale-like leaves and clustered small usually pink flowers. They are especially fitted for seaside planting, as the salt air and wind storms do not permanently injure them. There are about ten species in cultivation so nearly alike in foliage that there is much confusion in the names given by the nurserymen. If the reader wishes certainly to determine the species he will need to examine the small flowers with a magnifying glass.

[Seeds; twig cuttings.]

KEY TO TAMARIX, INCLUDING MYRICARIA

* Stamens 10 grown together for ⅓ to ½ their length. Myricària. (**A.**)
  - **A.** Racemes of pink or whitish flowers in compound terminal clusters 4–6 inches long. GERMAN TAMARISK (35) — Tamarix (Myricaria) germànica.
  - **A.** Racemes usually simple. DAHURIAN TAMARISK — Tamarix (Myricaria) dahùrica.
* Stamens not grown together or but slightly so at base, usually 4 or 5. (**B.**)

B. Petals 4; racemes short on the sides of last year's branches in early spring. April and May. (**C.**)

C. Petals spreading and wilting, persistent. **African Tamarisk** (36) — Tamarix parvíflòra.

C. Petals erect and dropping off. **Four-anthered Tamarisk** — Tamarix tetrándra.

B. Petals 5. (**D.**)

D. Leaves pubescent, bluish green; flowers with deciduous petals nearly sessile in racemes 2–3 inches long. **Pubescent-leaved Tamarisk** — Tamarix híspida.

D. Leaves smooth. (**E.**)

E. Petals deciduous; shrub or small tree with whitish or pinkish flowers, May–July (in var. índica, **Late-flowering Tamarisk**, Aug., Sept.). **French Tamarisk** (37) — Tamarix gállica.

E. Petals persistent, wilting. (**F.**)

F. Racemes about 2 inches long on old branches. **Japan Tamarisk** — Tamarix juniperìna.

F. Flowers in terminal compound clusters. (**G.**)

G. Shrub or small tree with spreading or drooping branches. **Chinese Tamarisk** — Tamarix chinénsis.

G. Shrub 4–6 feet high with upright branches. **Caspian Tamarisk** — Tamarix odessána.

Áscyrum. St. Andrew's Cross and St. Peter's-wort are pretty yellow-flowered, slightly shrubby, summer-flowering plants sometimes cultivated in borders. They can be known by the calyx of 4 pieces (2 large and 2 small), 4 cross-like broadly spreading petals and many stamens. The leaves are opposite with entire edges. St. Peter's-wort (38) — Ascyrum stáns — is the taller growing, 2–3 feet, with larger flowers, thicker leaves, and 3 or 4 styles. St. Andrew's Cross (39) — Ascyrum hypericoìdes — is more spreading with lighter colored smaller flowers and 2 styles. The fruit is a dry 1-celled many-seeded pod.

[Divisions; seeds.]

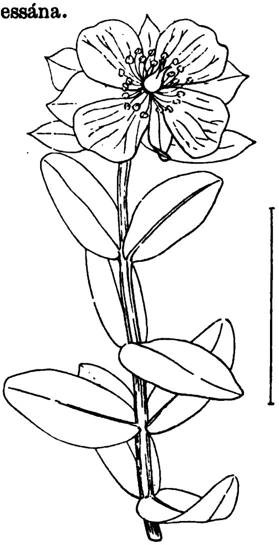


Fig. 38. — St. Peter's-Wort.

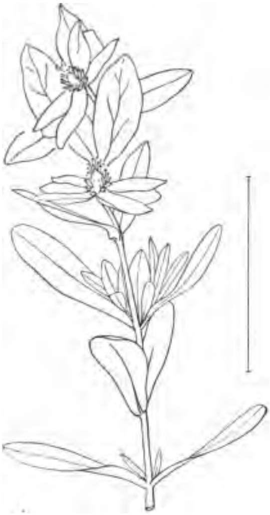


FIG. 39. — St. Andrew's Cross.

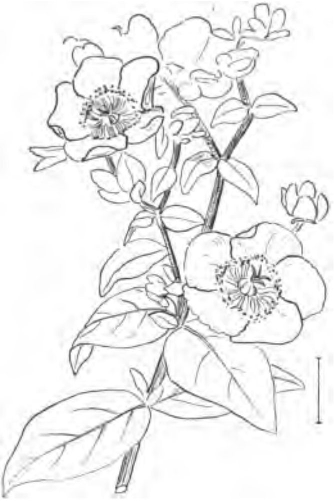


FIG. 40. — Hooker's Hypericum.

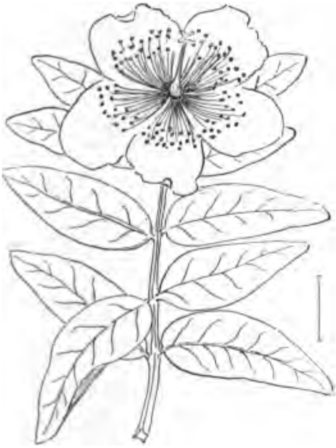


FIG. 41. — Aaron's Beard.

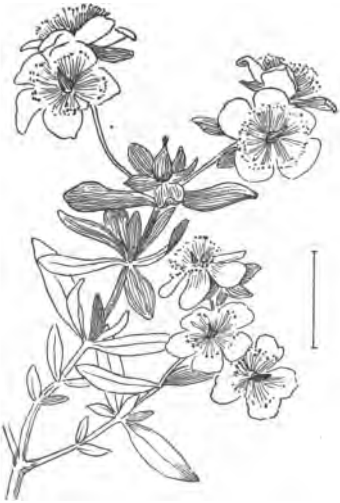


FIG. 42. — Kalm's St. John's-Wort.

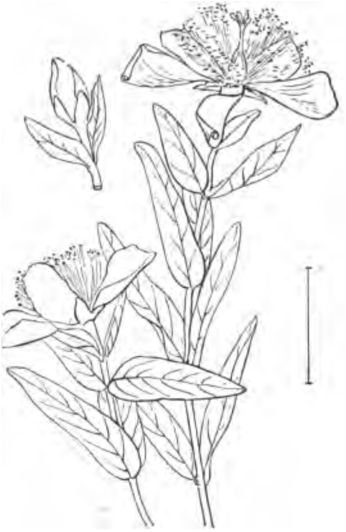


FIG. 43. — Great St. John's-Wort.

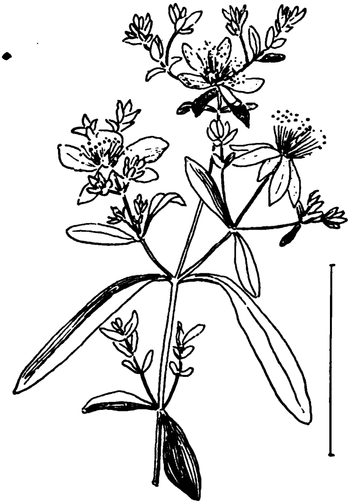


FIG. 44. — Bushy St. John's-Wort.

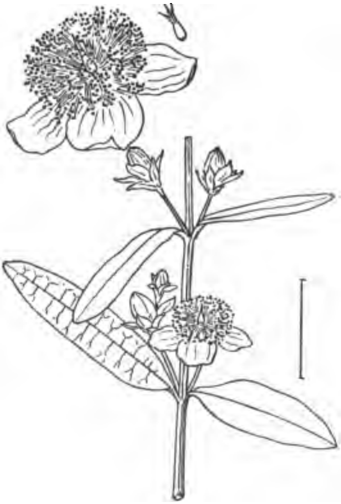


FIG. 45. — Bartram's Hypericum.

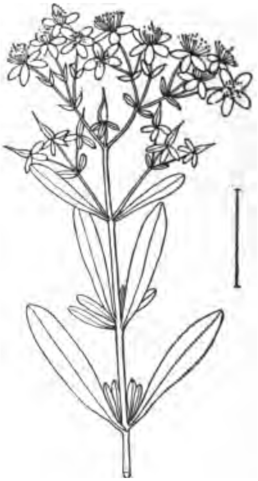


FIG. 46. — Shrubby St. John's-Wort.

Hypéricum. The St. John's-worts are an extensive genus (200 species) of herbs, shrubs, and trees with more or less dotted, opposite, entire-edged leaves and showy yellow flowers with many stamens. The 5 oblique-edged yellow petals, many stamens (frequently united into groups), and the transparent-dotted opposite leaves are the peculiarities which will separate these plants from all others. About a dozen species are in cultivation. Several species are evergreen in the North, and others additional to these hold their leaves through the winter South. Some are trailing plants spreading over the bare ground, others are erect shrubs 5 to 6 feet high. They flower from July to October, but most bloom in early August when but few flowers are seen in the shrubbery.

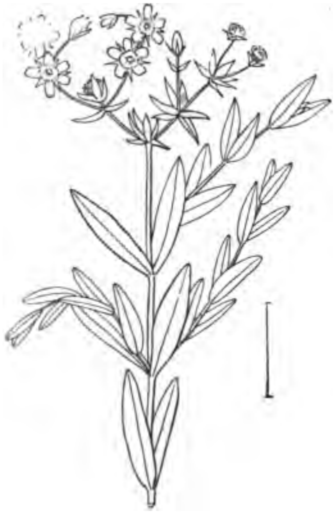


Fig. 47. — Creeping St. John's-Wort.

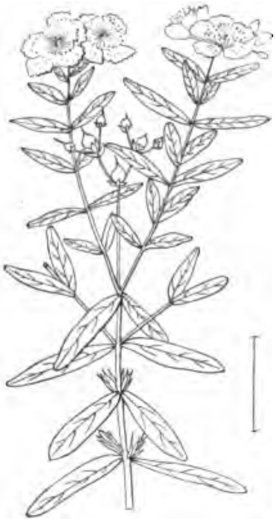


Fig. 48. — Small-Leaved Hypericum.

[Seeds; suckers; twig cuttings.]

KEY TO THE COMMONLY CULTIVATED HYPERICUMS

* Stem round; leaves about evergreen; pistil with 5 styles; flowers golden yellow; hardy south of New York. (**A.**)

A. Flowers 2–3 inches broad, petals thick and orbicular, stamens in 5 clusters, August; leaves sometimes 4 inches long; slightly shrubby, to 2½ feet high. Hooker's Hypericum (40) — Hypericum Hookeriànum.

A. Flowers 2 inches broad, stamens with reddish anthers, July, Aug.; branches erect with pendulous tips; 2 feet high. Gold Flower — Hypericum Moseriànum.

* Stem 4-angled; pistil with 5 styles. (**B.**)

B. Leaves evergreen, leathery, dark above, whitish below, 2–4 inches long; flowers 3 inches broad; low plant 1 foot high, tufted. Aaron's Beard (41) — Hypericum calycìnum.

B. Leaves about linear 1–2½ inches long, bluish above; flowers ½–1 inch broad; shrub 2–3 feet high with contorted stems. Kalm's St. John's-wort (42) — Hypericum Kalmiànum.

B. Leaves 2–5 inches long, clasping; flowers 1–2 inches wide; plant 2–6 feet high but not shrubby even at base. Great St. John's-wort (43) — Hypericum Áscyron.

* Stem 4-angled; pistil with 3 styles. (**C.**)

C. Fruit berry-like, the size of peas, violet when ripe; plant very aromatic; leaves ovate, 4 inches long. Sweet Amber — Hypericum Androsæ̀mum.

C. Fruit a 1–3-celled capsule; dense low shrub forming rounded tufts; leaves ½–2½ inches long, bluish; flowers 1 inch wide. Buckley's Hypericum — Hypericum Búckleyi.

C. Fruit 3-celled capsules; erect shrub 4–6 feet high; leaves linear, crowded, 1–2 inches long; flowers ½ inch wide. Bushy St. John's-wort (44) — Hypericum densiflòrum.

* Stems, at least in the younger growth, 2-ridged or 2-winged; pistil with 3 styles grown more or less together. (**D.**)

D. Fully shrubby, 3 feet high; bark red or brown splitting off in layers; flowers, 1½ inches broad, showy, July–Sept. (**E.**)

E. Leaves somewhat leathery, oblong, 1–3 inches long, whitish beneath; flowers sessile 1–3 in cluster. Bartram's Hypericum (45) — Hypericum aùreum.

E. Leaves thinner, more slender, usually pointed, 1–3 inches long, dark glossy green. Shrubby St. John's-wort (46) — Hypericum prolìficum.

D. Shrubby only at base or herbaceous throughout; flowers small. (**F.**)

F. Erect from a creeping base to 2 feet; leaves lanceolate, 1–2 inches long; flowers about ½ inch wide. Creeping St. John's-wort (47) — Hypericum adprèssum.

F. Erect to 4 feet; leaves ½–1½ inches long and somewhat clasping at base; flowers under ½ inch wide. Small-leaved Hypericum (48) — Hypericum opàcum.

Camėllia. This is a genus of elegant evergreen, usually glossy-foliaged, large-flowered plants hardy only in the Gulf states, though a few specimens are found in well-protected positions as far north as Washington. There are hundreds of named varieties, double and single, white, red, and variegated. They have peculiar waxy petals and, in the single forms, many more or less united stamens. JAPAN CAMELLIA (49) — Camellia japónica — is the parent of most of the varieties. The leaves are simple, alternate, evergreen with notched edges. Besides these species and varieties with erect flowers cultivated entirely for ornament, the TEA PLANT — Camellia théa — with nodding flowers is cultivated for use. In this the flowers are much smaller, under 1½ inches and single with 5 petals. It grows to the height sometimes of 30 feet and can be successfully grown in the Gulf states. [Seeds; twig cuttings; layers; grafting.]

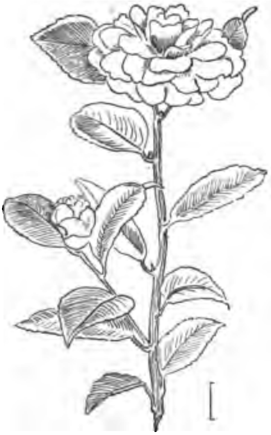


FIG. 49. — Japan Camellia.

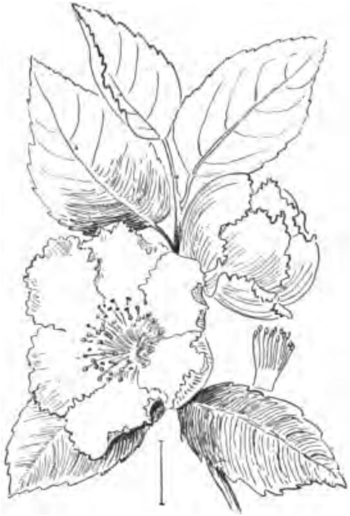


FIG. 50. — Alleghany Stuartia.

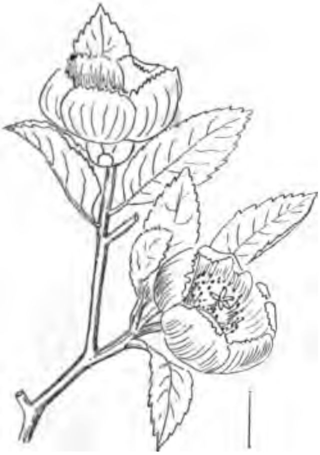


FIG. 51. — Japanese Stuartia.

Stuártia. This, like the Camellias, has large flowers and united stamens, but the foliage is deciduous and the shrubs are hardy in the North. The alternate leaves are simple, feather-veined, with notched edges. The flowers are white or cream-colored with usually 5 petals.
[Seeds; layers; twig cuttings.]

KEY TO THE STUARTIAS

- * With purple spreading stamens and globular fruit ½ inch or more broad; shrub 6–12 feet high blooming in May and June. Round-fruited Stuartia — Stuartia Malachodéndron.
- * With wavy-edged cream-colored petals and curved white stamens having orange anthers, July and Aug.; capsules 5-angled, ovate; 6–15 feet high. Alleghany Stuartia (50) — Stuartia pentágyna.
- * With concave orbicular petals, silky outside; 10–50 feet high with smooth red bark peeling off in great thin layers or flakes and acute-tipped narrow leaves 1½–3 inches long. Japanese Stuartia (51) — Stuartia Pseùdo-caméllia.

Gordònia. The Gordonias are nearly evergreen with large white flowers having many united stamens, like the Stuartias, but the stamens are in five clusters on a cup of white petals. These plants are usually trees but at the northern border of their range (the hardiest, Gordonia

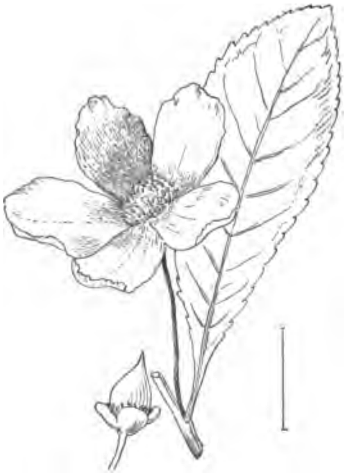


Fig. 52. — Loblolly.

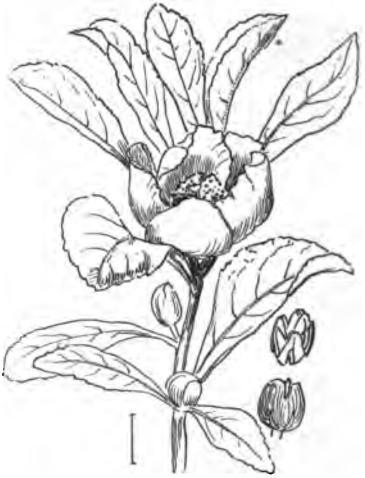


Fig. 53. — Franklinia.

pubéscens, can be grown in Massachusetts) reduced to shrubs and blooming when small.

LOBLOLLY or TAN 'BAY' (52) — Gordonia Lasiánthus — has a pointed pod and is fully evergreen with glossy notch-edged leaves 4 to 6 inches long and pure white flowers 2½ inches broad in July and August.

FRANKLÍNIA (53) — Gordonia pubéscens — has a globular pod and deciduous leaves which turn a brilliant scarlet before dropping in the autumn. The pure white flowers are 3 inches broad, silky outside, blooming in September and October.

There is another plant, always a shrub, probably belonging to this genus, from China, CHINESE GORDONIA (54) — Gordonia anómala. This has almost sessile creamy-white flowers 2 to 3 inches broad, in November, and nearly entire-edged dark evergreen oblanceolate leaves 3 to 6 inches long.

[Seeds; layers; twig cuttings.]

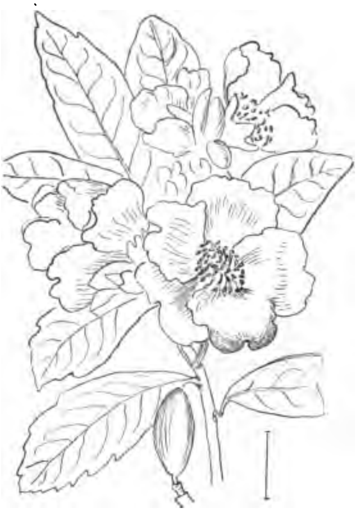


FIG. 54. — Chinese Gordonia.

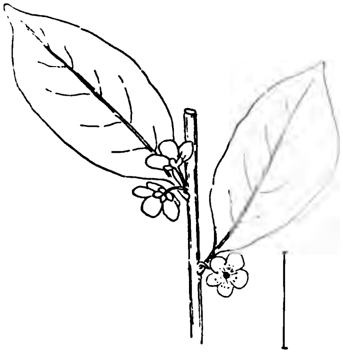


FIG. 55. — Japanese Cleyera.

Cleyèra ochnàcea. JAPANESE CLEYERA (55) is a tender shrub (6 feet high) with alternate, glossy, evergreen, entire-edged (except at tip) leaves pointed at both ends; the flowers are fragrant, numerous, creamy-white in June; the fruit are red berries which last all winter. Hardy in the Gulf states. There is a variety, trícolor, with grayish blotchings and white and rose-colored edgings to the foliage; the flower has 5 sepals, 2 bracts, and 5 petals; the berries are 2 to 3-celled.

[Seeds.]

Hibíscus. The ROSE MALLOWS form a large group of mainly herbaceous plants with large hollyhock-like flowers. The only woody species in the North is the extensively cultivated summer-flowering Shrubby Althea, usually called 'Rose of Sharon' (56) — Hibíscus syrìacus,— with tapering-based more or less 3-lobed leaves. There are scores of named varieties with single or double flowers of many colors, — white, pink, red, purple, and variegated.

In southern California there is in cultivation another tall shrubby species from Australia, Green Kurrajong or Queensland Sorrel Tree — Hibiscus heterophýllus, — with abundant white flowers having a deep crimson center. These flowers are large, 3 to 4 inches long, with hairy calyx and capsule. The leaves are, as the name indicates, exceedingly variable in form: linear, lanceolate, oblong, and with a tendency to 3-lobing in the broader forms. These leaves are 5 to 6 inches long and in some varieties white beneath, though usually green on both sides.

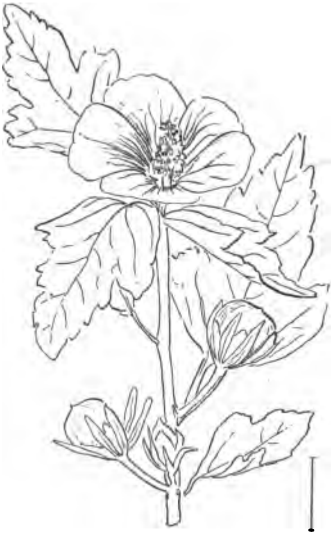


Fig. 56. — Rose of Sharon.

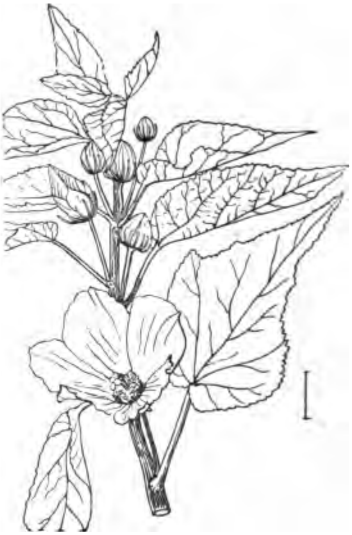


Fig. 57. — Swamp Rose Mallow.

Besides these two shrubby species, we include a tall swamp-growing hardy herb, Swamp Rose Mallow (57) — Hibiscus Moscheùtos. It grows 3 to 7 feet high, has white or pink flowers 4 to 8 inches broad often with a crimson center, in summer. The ovoid capsule is 1 inch long and remains on the plant through the winter. The leaves are large, ovate, notch-edged, sometimes slightly 3-lobed and almost velvety beneath.

[Seeds; twig cuttings.]

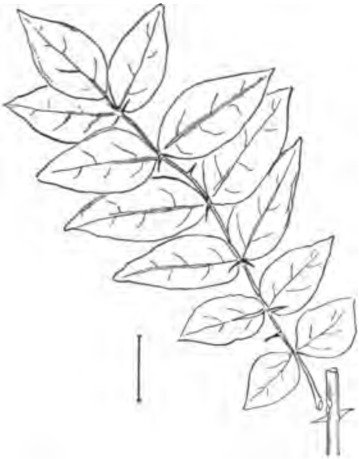


FIG. 58. — Northern Prickly 'Ash.'

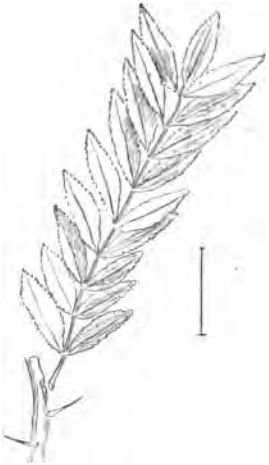


FIG. 59. — Chinese 'Pepper.'

Zanthóxylum. The PRICKLY 'ASHES' or TOOTHACHE-TREES, with prickly pinnate leaves and pepper-like pods, are wild and frequently cultivated for the foliage and the small peppery fruit. The flowers are insignificant. The northern species has small clusters of flowers and fruit in the axils of the leaves, while the southern and the Chinese species have large terminal clusters.

NORTHERN PRICKLY 'ASH' (58) — Zanthoxylum americànum, — hardy North and often cultivated, has prickly leaves with 5 to 11 opposite nearly entire-edged sessile blades 1½ to 2 inches long; stems also prickly.

CHINESE 'Pepper' (59) — Zanthoxylum piperìtum — has 11 to 13 somewhat notched blades ¾ to 1½ inches long and is probably hardy in the middle states.

TOOTHACHE-TREE (60) or SOUTHERN PRICKLY 'ASH' — Zanthoxy-

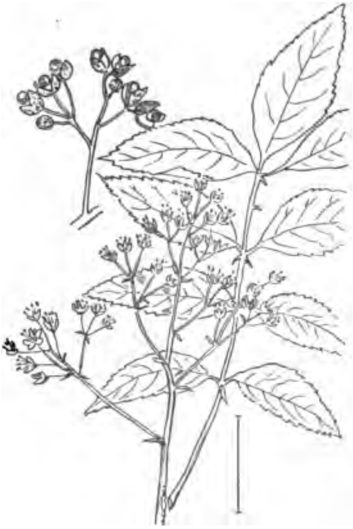


FIG. 60. — Toothache-tree.

lum Clàva-Hérculis — has 7 to 17 slightly notched nearly sessile blades 1½ to 3 inches long, tree-like (often 30 feet high) and is hardy in the middle states. [Seeds; suckers.]

Ptèlea trifoliàta. Shrubby Trefoil or Hop Tree (61) is a tall ornamental aromatic shrub with elm-like winged fruit in clusters and 3-bladed alternate leaves. The small greenish flowers bloom in May and June. The fruit soon forms and remains on the bush till winter. The leaves when held towards the light show pinhole-like transparent dots. This is probably the only species in general cultivation, though in the West there are several others (a late writer, Edward L. Green, would divide them into over 50), differing in color and pubescence of foliage and in size and shape of fruit. [Seeds; layers.]

Skímmia. The Skimmias are handsome evergreen shrubs with simple alternate entire-edged leaves, insignificant flowers (usually of 4 petals) and small red berries with 2 to 4 seeds lasting over the winter. The leaves are transparent-dotted, as in the Hop Tree. They are not fully hardy north of Washington. The Japan species is the taller, to 5 feet, and has brighter colored berries, while the Chinese is smaller, 2 to 4 feet, with more abundant dull red berries.

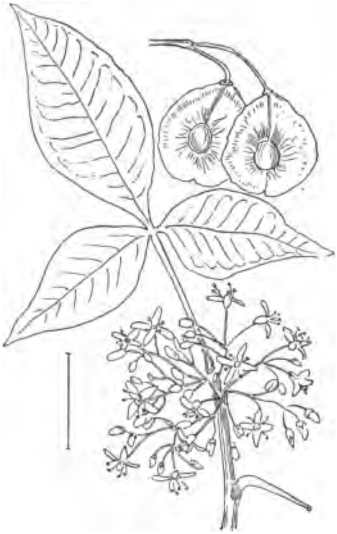


Fig. 61.—Hop Tree.

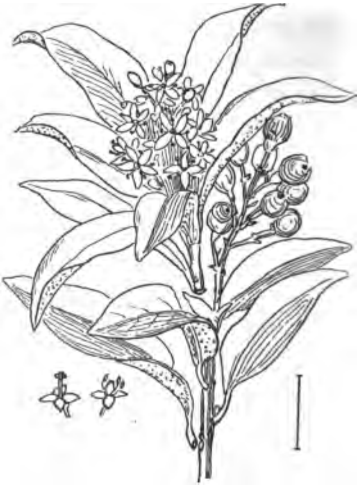


Fig. 62.—Japan Skimmia.

Japan Skimmia (62) — Skimmia japonica — has the leaves crowded at the ends of the branches, more or less yellowish green on both sides, 3½ to

5 inches long. This species is more or less diœcious and so care must be taken to have a stamen-bearing plant to fertilize the pistils.

Chinese Skimmia — Skimmia Fortùnei — has larger, 3½ to 10 inches

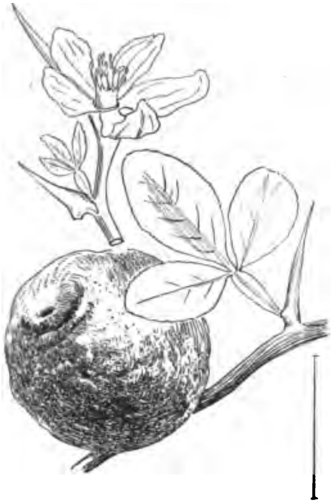


Fig. 63. — Hardy Orange.

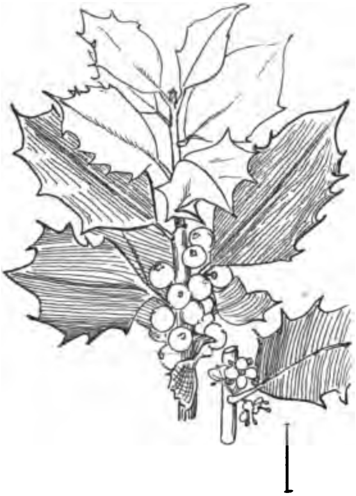


Fig. 64. — European Holly.

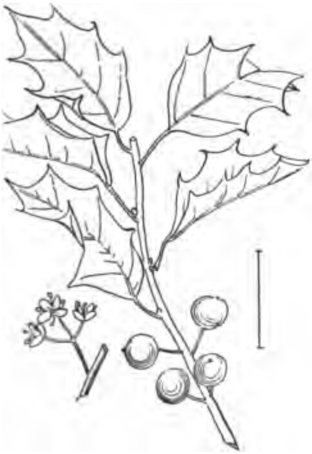


Fig. 65. — American Holly.

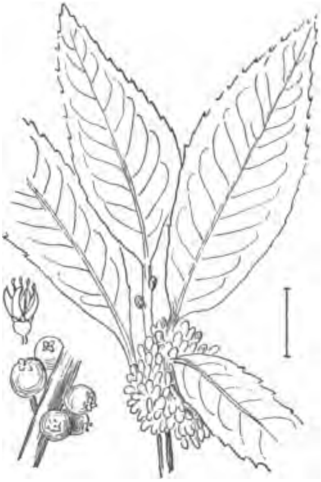


Fig. 66. — Japan Large-leaved Holly.

long, and greener leaves and more abundant flowers and fruit. In this the berries are somewhat pear-shaped and about all the bushes have both stamens and pistils. [Seeds; twig cuttings.]

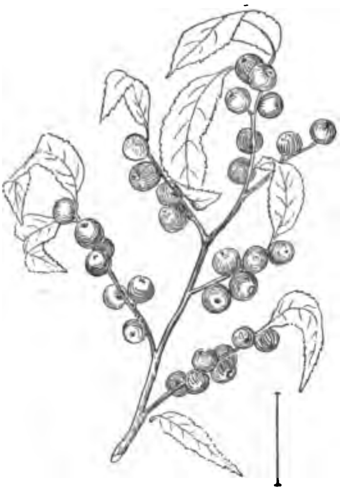


FIG. 67. — Red Winterberry.

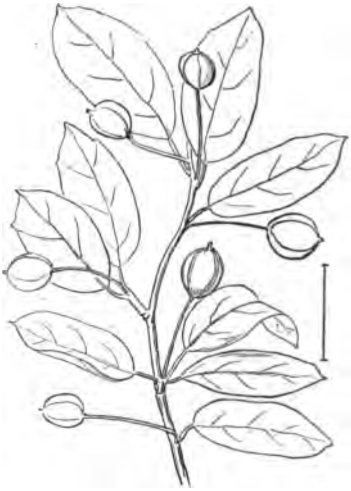


FIG. 68. — Mountain Holly.

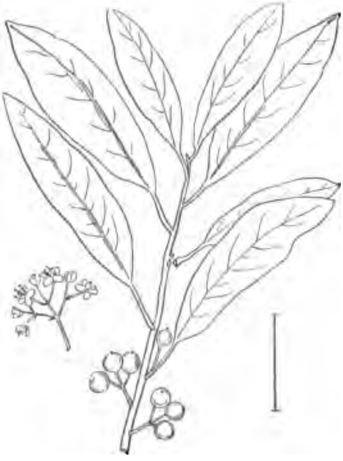


FIG. 69. — Dahoon.

Cítrus. The CITRUS plants include the lemons, oranges, grape fruit, limes, etc., and, with the exception of the 3-bladed thorny species, HARDY ORANGE (63) — Citrus trifoliàta — hardy north to Philadelphia, are found only in the extreme South. The evergreen leaves of all the species are peculiar in that the blade (generally there is but one) is joined to a usually winged stem and so must be considered as compound, though with but one spreading portion.

[Seeds; grafting of varieties, especially of seedless forms.]

Ìlex. The HOLLY shrubs and trees are extremely beautiful in foliage and fruit. Of the two species with evergreen spiny-edged leaves, the **European Holly** (64) — Ilex Aquifòlium, — has brighter red berries but does not seem to thrive in our climate; the **American Holly** (65) — Ilex opàca, — with duller berries, is wild throughout and frequent in cultivation. The fruit of both remain on the plants through the winter and have extensive use in indoor

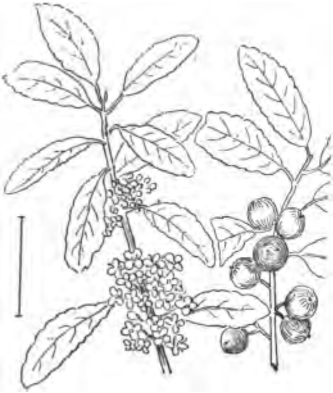


Fig. 70. — Cassena.

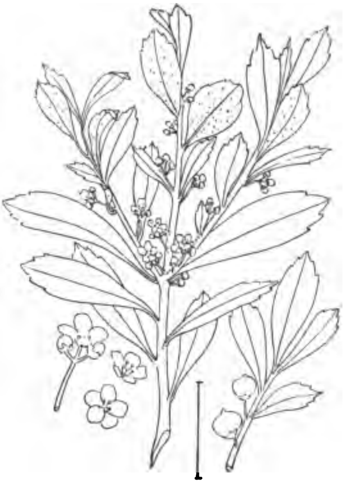


Fig. 71. — Inkberry.

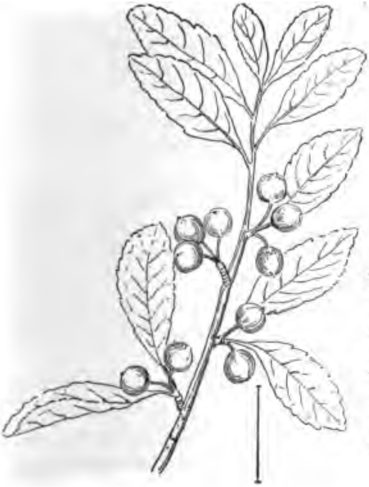


Fig. 72. — Swamp Holly.

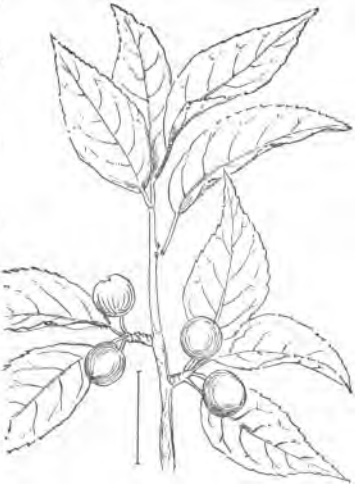


Fig. 73. — Large-leaved Holly.

decorations at Christmas time. The best of the evergreens without spiny-edged leaves are those from Japan. The one with the largest and brightest leaves (6 inches long and 3 to 4 inches wide) is **JAPAN LARGE-LEAVED HOLLY** (66) — Ilex latifòlia; while the one with foliage next in size (3 to 4 inches long) is **ENTIRE-LEAVED HOLLY** — Ilex íntegra. The small-leaved one (about 1 inch long) is **SMALL-LEAVED HOLLY** — Ilex crenàta.

The best of the deciduous-leaved Hollies is **RED WINTERBERRY** (67) — Ilex verticillàta, — which grows about 6 feet high and has small brilliant red berries remaining on the bare bushes in close clusters through most of the winter. **MOUNTAIN HOLLY** (68) — Nemopánthus mucronata (N. fasciculàris) — has bright ridged red berries on stems about an inch long; it grows 6 to 8 feet high with ash-colored bark. All of the hollies have alternate simple leaves. [Seeds, taking 2 years.]

KEY TO THE HOLLIES

* Foliage evergreen. (**A.**)
  A. Leaves with spiny-edged teeth; trees rather than shrubs. (**B.**)
    B. Flowers and fruit on axillary clusters on old growth. **EUROPEAN HOLLY** (64) — Ilex Aquifòlium.
    B. Flowers and fruit in small axillary clusters on new growth. **AMERICAN HOLLY** (65) — Ilex opàca.
  A. Leaves with few spines at tips and base; shrub with short spreading branches. **CHINESE HOLLY** — Ilex cornùta.
  A. Leaves without spiny edges, entire or slightly notched. (**C.**)
    C. Fruit red; hardy only south of Washington; shrubs or trees to 40 feet or more. (**D.**)
      D. Leaves large, 3–7 inches long, glossy green; fruit large in sessile clusters. **JAPAN LARGE-LEAVED HOLLY** (66) — Ilex latifòlia.
      D. Leaves obovate, entire-edged, 3–4 inches long; fruit large, long-stemmed. **JAPAN ENTIRE-LEAVED HOLLY** — Ilex íntegra.
      D. Leaves obovate, nearly entire, 2–3 inches long; fruit small, dull red to yellow. **DAHOON** (69) — Ilex Cassìne.
      D. Leaves oval, small, ½–2 inches long; fruit on old growth globose, small. **CASSENA** (70) or **YAUPON** — Ilex vomitòria.
    C. Fruit black, nearly solitary on new growth. (**E.**)
      E. Leaves small, crenate, smooth, ½–1½ inches long; hardy only South. **JAPAN SMALL-LEAVED HOLLY** — Ilex crenàta.
      E. Leaves larger, 1–2 inches long, notched towards tips; hardy upright shrub to 8 feet. **EVERGREEN WINTERBERRY**. **INKBERRY** (71) — Ilex glàbra.

* Foliage deciduous; fruit red or orange-red on stems ½ inch or less long. (**F**)

F. Leaves clustered on short side spurs; berries ½ inch; hardy shrubs or trees to 30 or 40 feet. (**G.**)

G. Leaves widest beyond the middle, 1½–3 inches long, dark above, pale beneath. Swamp Holly (72). — Ilex decídua.

G. Leaves widest below the middle, 2–6 inches long, sharply serrate. Large-leaved Holly (73) — Ilex montícola.

F. Leaves alternate and not in clusters; berries but ⅓ inch or less. (**H.**)

H. Berries about ⅓ inch, orange-red. Smooth Winterberry — Ilex lævigàta.

H. Berries about ¼ inch, bright red. Red Winterberry (67) — Ilex verticillàta.

H. Berries about ⅙ inch, bright red. Japan Winterberry — Ilex serràta.

* Foliage deciduous; fruit ridged, red, on stems 1 inch or more long. Mountain Holly (68) — Nemopánthus mucronàta (N. fasciculàris).

Cyrílla racemiflòra. Leatherwood (74) or Black Ti-ti is a nearly evergreen shrub or small tree with alternate oblanceolate, entire-edged, smooth bright green leaves, hardy to New York but evergreen only South. The flowers are small, white, 5-parted, in slender ra-

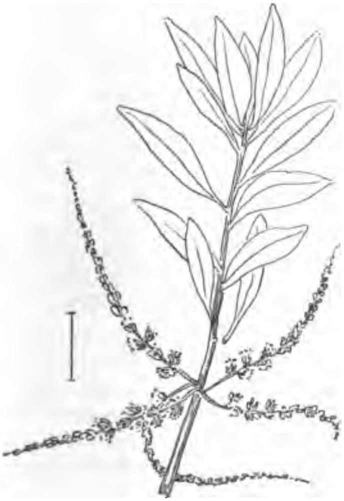


Fig. 74. — Leatherwood.

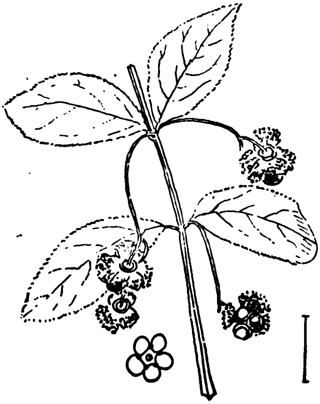


Fig. 75. — Running Euonymus.

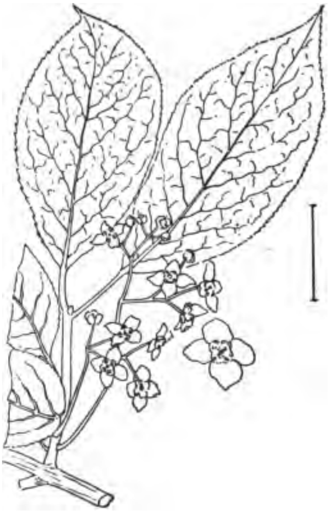


FIG. 76. — Burning Bush.

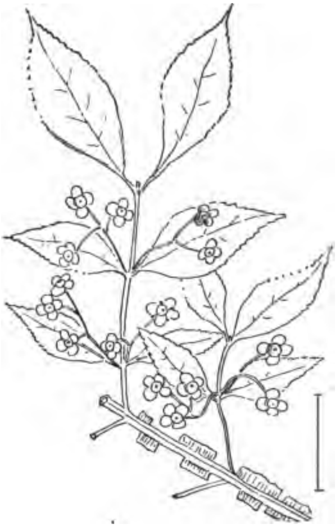


FIG. 77. — Winged Burning Bush.

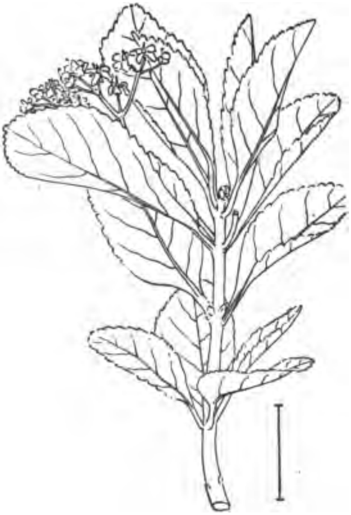


FIG. 78. — Japanese Spindle Tree.

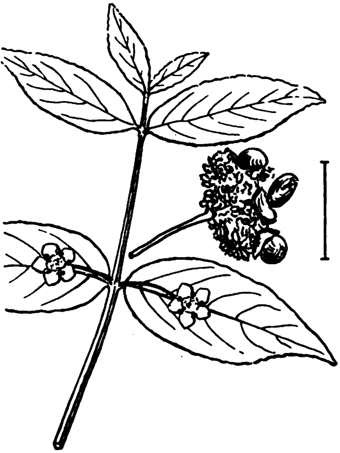


FIG. 79. — Erect Strawberry Bush.

cemes, June, July. The fruit are small, 2-celled, 2-seeded pods less than ⅛ inch in diameter. [Seeds ; twig cuttings under glass.]

Euónymus. The Burning Bushes or Spindle Trees have flat greenish 4- or 5-petaled flowers, opposite leaves and generally 4-sided twigs. The bright two-colored fruit, which is very ornamental in the fall, is a good characteristic for the determination of the group by the beginner in the study of shrubs. These two colors are shown when the capsule bursts open and the bright red- or orange-coated seeds appear.

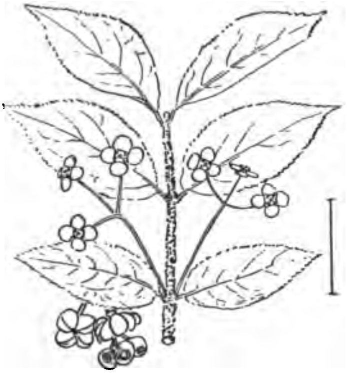


Fig. 80. — Warty Euonymus.

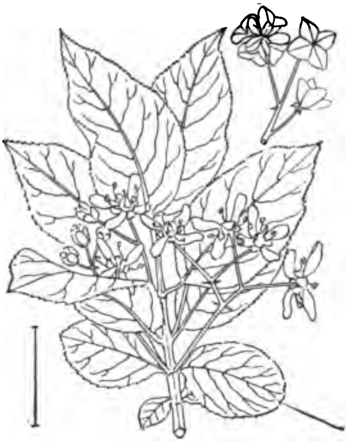


Fig. 81. — European Spindle Tree.

Running Euonymus, (75) or Strawberry Bush — Euonymus obovàtus — has a straggling growth 2 to 5 feet high, thrives well in shady places, and receives its name from the rough warty strawberry-like look to its capsules. The American Burning Bush (76) — Euónymus atropurpùreus — has smooth deeply 3–4-lobed red capsules and grows to the height of 6 to 25 feet. The European species differs from the American one in that the an-

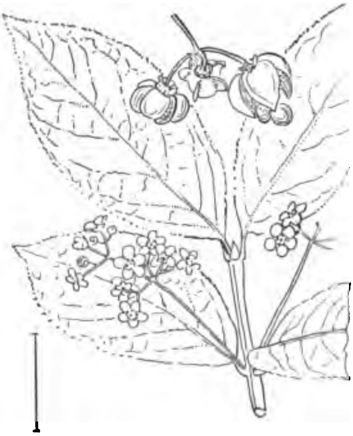


Fig. 82. — Broad-leaved Spindle Tree.

thers of the flowers are not sessile and it is not so tall-growing, 3 to 15 feet. Winged Burning Bush (77) — Euonymus alàtus — from Japan has usually broadly ridged or winged stems. There is an evergreen spindle tree from Japan often cultivated though not fully hardy North; of this there are a number of varieties with white- and yellow-blotched leaves. Most of the species bloom in June and all from May to July.

[Seeds (slow); twig cuttings.]

KEY TO THE BURNING BUSHES

* Leaves evergreen, thick and glossy, 1–3 inches long. **(A.)**
  A. Erect to 10 feet. Japanese Spindle Tree (78) — Euónymus japónicus.
  A. Trailing, procumbent or climbing. Climbing Euonymus — Euonymus radicans.
* Leaves thinner and deciduous. **(B.)**
  B. Stem broadly ridged with wing-like corky growths. Winged Burning Bush (76) — Euonymus alàtus.
  B. Stem usually somewhat 4-angled but not winged. **(C.)**
    C. Fruit rough, warty, strawberry-like. **(D).**
      D. Upright shrub to 8 feet. Erect Strawberry Bush (79) — Euonymus americànus.
      D. Procumbent to 1 foot. Running Euonymus (75) or Strawberry Bush — Euonymus obovàtus.
    C. Fruit more or less deeply 3–5-lobed. **(E.)**
      E. Branches densely warty; erect to 6 feet. Warty Euonymus (80) — Euonymus verrucòsus.
      E. Branches smooth. **(F.)**
        F. Flowers purplish with yellow anthers; low shrub to 2 feet with linear leaves. Narrow-leaved Burning Bush — Euonymus nànus.
        F. Flowers yellowish with yellow anthers; shrub to 15 feet. **(G.)**
          G. Clusters 3–7-flowered; capsule deeply 4-lobed. European Spindle Tree (81) — Euonymus europæ̀us.
          G. Clusters more flowered; capsule winged, large; leaves large, 2–4 inches long. Broad-leaved Spindle Tree (82) — Euonymus latifòlius.
        F. Flowers purple with purple anthers. Burning Bush (76) or Waahoo — Euonymus atropurpùreus.

- **F.** Flowers yellowish or whitish with purple anthers; tall shrub or tree to 25 feet. (**H.**)
  - **H.** Leaves large, — 3–6 inches long and 1–2½ inches broad. SIEBOLD'S EUONYMUS — Euonymus Sieboldiànus.
  - **H.** Leaves smaller, 2–5 inches long and under 1 inch broad. HAMILTON'S EUONYMUS — Euonymus Hamiltoniànus.
  - **H.** Leaves small, 2–4 inches long; fruit abundant and large; seeds white- or pinkish- and orange-coated. BUNGE'S EUONYMUS — Euonymus Bungeànus.

Rhámnus. The BUCKTHORNS are large shrubs or small trees sometimes cultivated for hedges and border plants. The leaves are either alternate or opposite, the flowers minute but fragrant, and the berries when ripe are red or black and 1- to 4-seeded. The opposite-leaved forms are thorny, while the alternate-leaved ones are not. One or two species, hardy only South, have small evergreen leaves, while most species have larger deciduous leaves. The buckthorns do best in rather moist soil. [Seeds (slow); twig cuttings.]

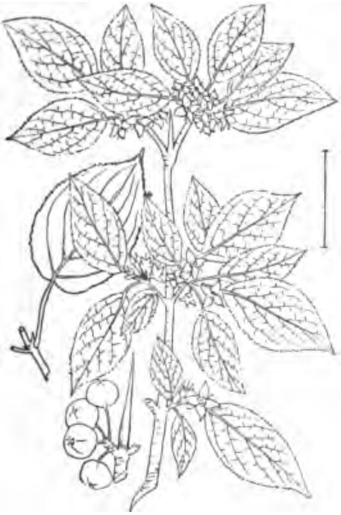


FIG. 83. — Common Buckthorn.

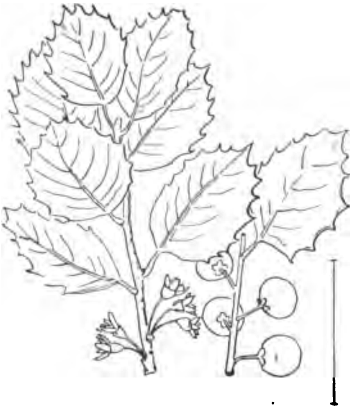


FIG. 84. — Red-fruited Evergreen Buckthorn.

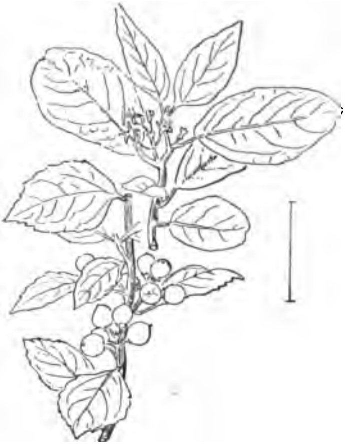


FIG. 85. — Black-fruited Evergreen Buckthorn.

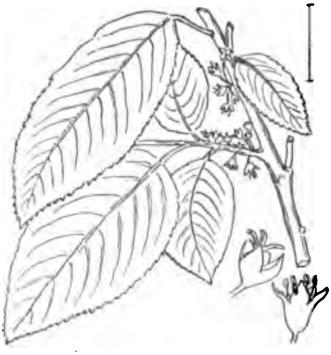


FIG. 86. — Lebanon Buckthorn.

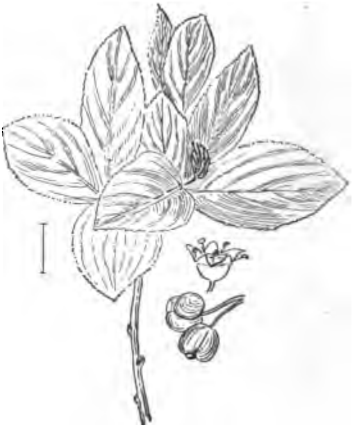


FIG. 87. — Alder-leaved Buckthorn.

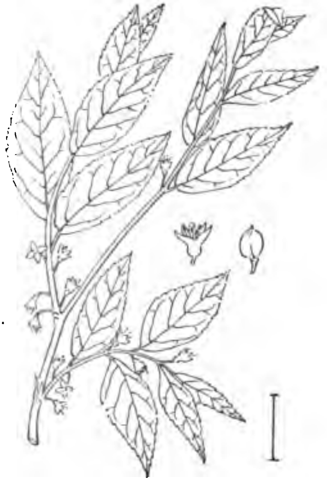


Fig. 88. — Lance-leaved Buckthorn.

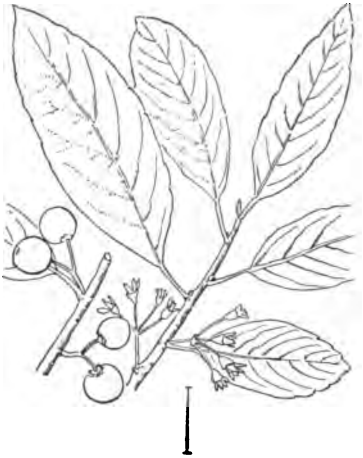


Fig. 89. — Indian 'Cherry.'

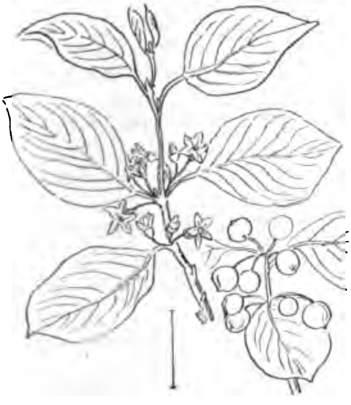


Fig. 90. — Alder Buckthorn.

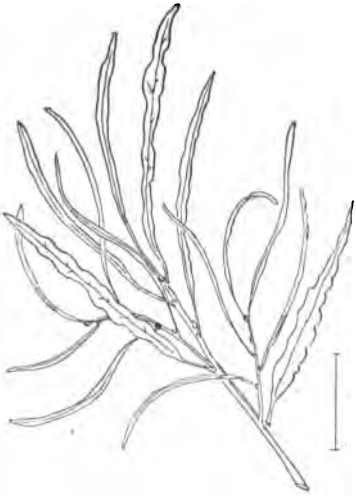


Fig. 91. — Fern-leaved Buckthorn.

KEY TO THE BUCKTHORNS

* Leaves opposite and serrate; plants usually thorny; fruit black, ¼ inch broad. (**A.**)

A. Leaves broad at base, sometimes heart-shaped. **Common Buckthorn** (83) — **Rhamnus cathártica.**

A. Leaves narrowed at base. **Dahurian Buckthorn** — **Rhamnus dahùrica.**

* Leaves alternate; plants not thorny; winter buds scaly; petals 4 or more. (**B.**)

B. Leaves evergreen; hardy only South; shrubs or small trees to 20 feet. (**C.**)

C. Twigs somewhat hairy; leaves orbicular, dentate; fruit red. **Red-fruited Evergreen Buckthorn** (84) — **Rhamnus cròcea.**

C. Twigs smooth; leaves oval; fruit nearly black. **Black-fruited Evergreen Buckthorn** (85) — **Rhamnus Alatérnus.**

B. Leaves thinner and deciduous with many side-veins, 10–20 pairs; fruit black. (**D.**)

D. Twigs smooth; leaves pale green, 2–6 inches long. **Mountain Buckthorn** — **Rhamnus alpìna.**

D. Twigs pubescent; leaves brownish when mature, 3–9 inches long. **Lebanon Buckthorn** (86) — **Rhamnus libanótica.**

B. Leaves deciduous with but few side-veins, 4–9 pairs; fruit black. (**E.**)

E. Wide-spreading shrub to 4 feet; fruit with 3 nutlets. **Alder-leaved Buckthorn** (87) — **Rhamnus alnifòlia.**

E. Tall erect shrub to 8 feet; fruit with 2 nutlets. **Lance-leaved Buckthorn** (88) — **Rhamnus lanceolàta.**

* Leaves alternate; plants not thorny; winter buds naked, not scaly; petals 5. (**F.**)

F. Leaves thickish, nearly evergreen, 1–7 inches long; fruit red changing to black. (**G.**)

G. Leaves with notched and often wavy margins. **Coffee-berry** — **Rhamnus Purshiàna.**

G. Leaves about entire. **Carolina Buckthorn or Indian 'Cherry'** (89) — **Rhamnus caroliniàna.**

F. Leaves thinner and smaller, 1–3 inches long; nutlets 2. **Alder Buckthorn** (90) — **Rhamnus Frángula.**

F. Leaves linear with undulate edge; nutlets 2. **Fern-leaved Buckthorn** (91) — **Rhamnus Frángula aspleniifòlia.**

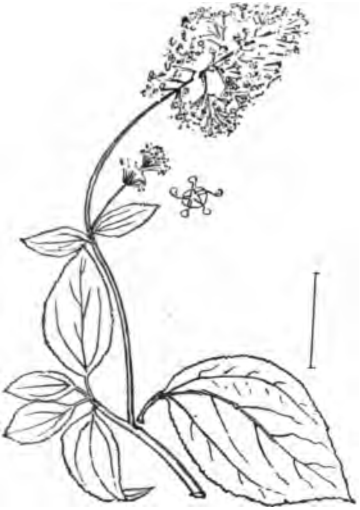


FIG. 92. — New Jersey Tea.

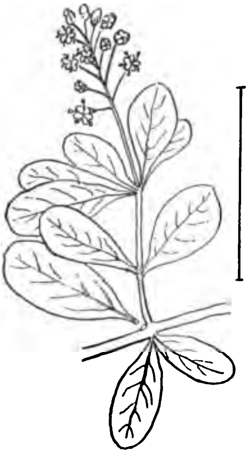


FIG. 93. — Evergreen Ceanothus.

Ceanòthus. The best example of this genus is NEW JERSEY TEA (92) — Ceanothus americànus, — a red-rooted shrub 1–2 feet high with alternate (opposite in some of the species of the genus) simple leaves. The small flowers in summer are crowded in a dense slender-stalked cluster. The 3-lobed small capsules separate into 3 nutlets and remain on through the winter. The peculiar flowers of the Ceanothus shown enlarged at (97) are the best test of the genus. Of the score or more American species doubtless a number of the western ones will be cultivated in the South, and one at least may endure the climate in the North. The eastern species are hardy throughout, thrive in the shade, and are well worthy of cultivation. The California species grow best in sunny places.

[Seeds; twig cuttings.]

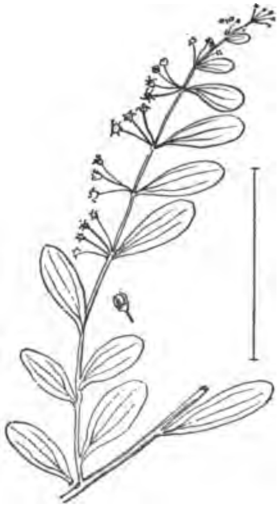


FIG. 94. — Fendler's Ceanothus.

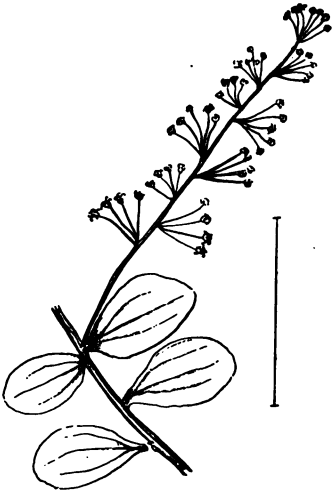


FIG. 95.—Spiny Ceanothus.

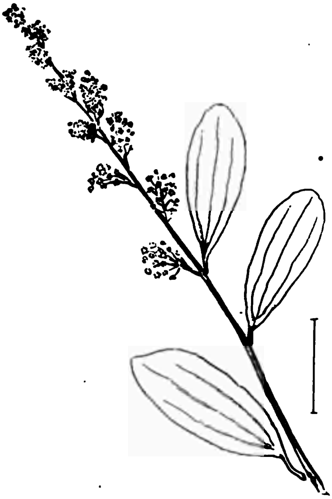


FIG. 96.—Entire-leaved Ceanothus.

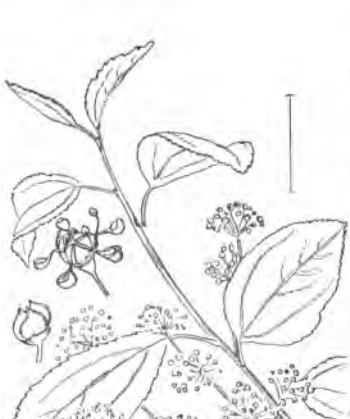


FIG. 97.—Red-stemmed Ceanothus.

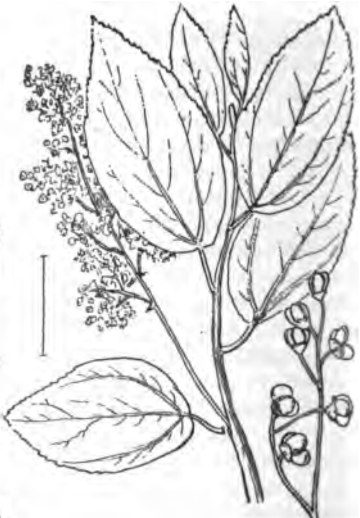


FIG. 98.—Velvety Ceanothus.

KEY TO THE SPECIES OF CEANOTHUS

* Hardy species growing in shade 1–3 feet high; leaves alternate, 3-ribbed from base; blooming July–Sept. (**A.**)

A. Leaves nearly an inch wide, broadest near base. NEW JERSEY TEA (92) — Ceanothus americànus.

A. Leaves ½ inch wide, broadest near middle. SMALLER RED-ROOT — Ceanothus ovàtus.

* Pacific region species, generally hardy only South and growing best in the sun. (**B.**)

B. Leaves opposite, evergreen, widest near tip, ¼–1 inch long. (**C.**)

C. Flowers white in small clusters along the branches, March to May; tall shrub. EVERGREEN CEANOTHUS (93) — Ceanothus cuneàtus.

C. Flowers blue; procumbent shrub. SPREADING CEANOTHUS. Ceanothus prostràtus.

B. Leaves alternate, nearly evergreen, entire-edged. (**D.**)

D. Low prostrate spiny shrub, the only western species likely to be hardy North. FENDLER'S CEANOTHUS (94) — Ceanothus Féndleri.

D. Tall, often spiny; flowers pale blue, April–June; leaves ⅓–1 inch long. SPINY CEANOTHUS (95) — Ceanothus divaricàtus.

D. Tall, not spiny; flowers blue, April–June; leaves 1–2 inches long. ENTIRE-LEAVED CEANOTHUS (96) — Ceanothus integérrimus.

B. Leaves alternate, notch-edged; tall shrubs or small trees. (**E.**)

E. Flowers white, May, June; leaves nearly orbicular, 1–3 inches long; branches reddish. RED-STEMMED CEANOTHUS (97) — Ceanothus sanguíneus.

E. Flowers white, June, July; leaves evergreen, somewhat cordate, hairy beneath. VELVETY CEANOTHUS (98) — Ceanothus velùtinus.

E. Flowers blue or purplish, April, May; leaves hairy beneath. HAIRY CEANOTHUS — Ceanothus hirsùtus.

E. Flowers blue or rarely white, May-July. BLUE 'MYRTLE' — Ceanothus thyrsiflòrus.

E. Flowers of many colors and under many names, the garden hybrids. HYBRID CEANOTHUS — Ceanothus hỳbridus.

Zízyphus. The JUJUBES are shrubs or trees with small alternate 3 to 5-ribbed leaves, small greenish axillary flowers, drupe-like, usually edible fruit. The plants are generally prickly. The most hardy species is not fully so north of Washington.

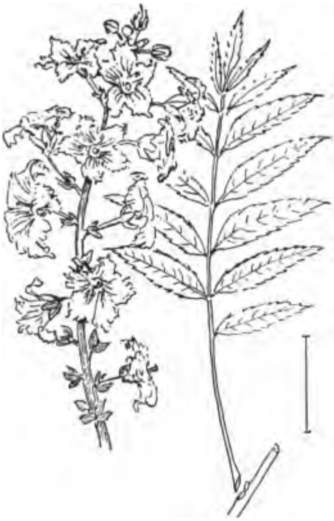


FIG. 99. — Chinese Flowering Chestnut.

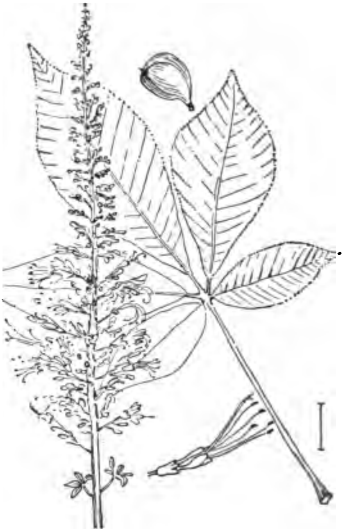


FIG. 100. — Long-racemed Horse-chestnut.

COMMON JUJUBE — Zizyphus sativa — is a shrub or small tree, often prickly, growing occasionally to the height of 30 feet. The leaves are so arranged along slender green stems as to look like compound pinnate ones but the flowers and fruit in their axils prove the leaves are simple. These leaves are from 1 to 3 inches long, dark glossy-green above, whitish below, oblique at base and finely notched. The fruit is short-stalked, dark red to black, ½ to ¾ inch long.

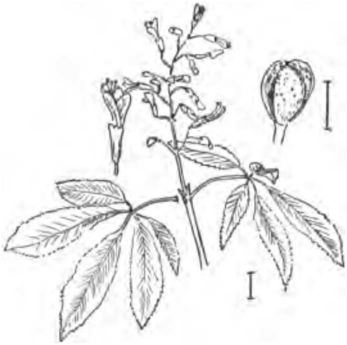


FIG. 101. — Smooth-fruited Buckeye.

There is a species only 3 to 4 feet high with yellow drupes, **LOTOS TREE** — Zizyphus Lòtus. This is always very prickly and probably not so hardy as the larger species.

[Seeds; twig cuttings; root cuttings.]

Xanthocèras sorbifòlia. XANTHOCERAS (99) or CHINESE or FLOWERING CHESTNUT. This is a rarely cultivated but very beautiful hardy shrub or small tree reaching the height of 15 feet, from North China. The alternate leaves are pinnate, 6 to 12 inches long, of 9 to 17 serrated blades 1 to 2 inches long. The flowers are very showy in terminal and axillary racemes in May. The individual flowers are ¾ inch broad of 5 white petals having yellow or red

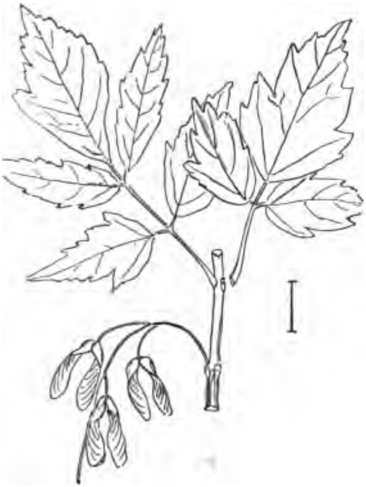


FIG. 102. — Ash-leaved Maple.

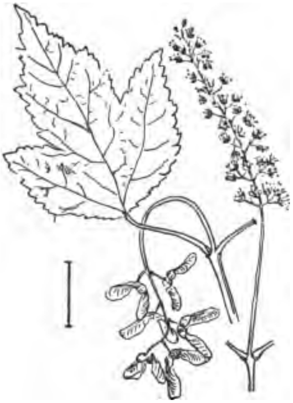


FIG. 103. — Mountain Maple.

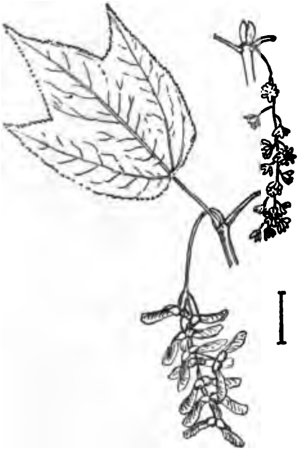


FIG. 104. — Striped Maple.

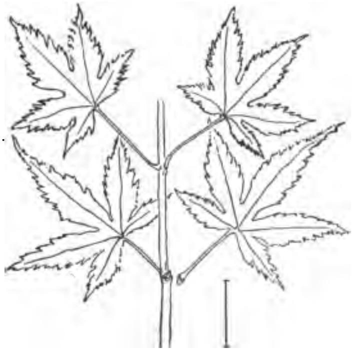


FIG. 105. — Japan Maple.

blotches at the base. The green fruit is large, 1½–2½ inches long, like the Buckeye, but splitting into three parts having in each several globular dark brown seeds ½ inch wide. It is well adapted to solitary planting rather than among other shrubs.

[Seeds; root cuttings.]

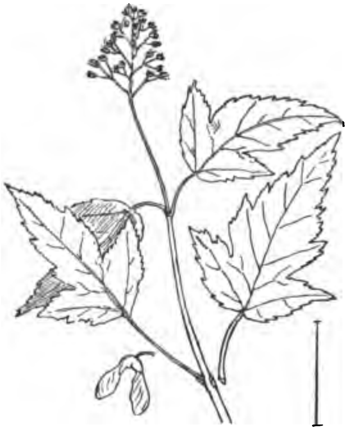


Fig. 106. — Siberian Maple.

Æsculus. The HORSE-CHESTNUTS and BUCKEYES are mainly ornamental trees with clusters of large flowers and opposite deciduous palmately compound leaves. There are two or three species shrubby in growth and so included here.

The one oftenest in cultivation as a lawn plant is the LONG-RACEMED HORSE-CHESTNUT (100) — Æsculus parviflòra; it grows as a broadly spreading bush 3 to 10 feet high and has in July and August erect narrow clusters of irregular white flowers. The fruit is large, smooth, with several large chestnut-like seeds. The blades of the leaves are 5 to 7, nearly sessile and finely serrate.

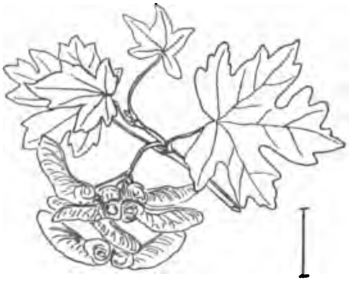


Fig. 107. — Field Maple.

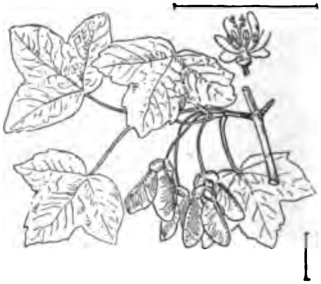


Fig. 108. — Montpelier Maple.

RED OR SMOOTH-FRUITED BUCKEYE (101) — Æsculus Pàvia — is sometimes a tree 20 feet tall but usually a shrub 2 to 10 feet high with purple to red flowers in large loose clusters in May or June and smooth fruit. The 5 to 7 blades of the leaf are finely serrate, short-stalked, and purplish below. Of this species there are a number of named varieties: péndula, weeping; cárnea, flesh-colored flowers; hùmilis, very low shrub 2 to 4 feet high; atrosanguínea, dark red flowers; variegàta, blotched leaves; etc. [Seeds; layers; root cuttings.]

Acer. The Maples are generally among the tallest and most useful of trees but a few of them are only shrubby in growth. The opposite palmately lobed simple deciduous leaves are almost universal in the genus, but the 2-winged fruit is a better test, because there are no exceptions to this characteristic. Ash-leaved Maple (102) or Box 'Elder' — Acer Negúndo — has compound leaves and is generally a small tree but is sometimes shrubby with smooth dark green bark on the twigs.

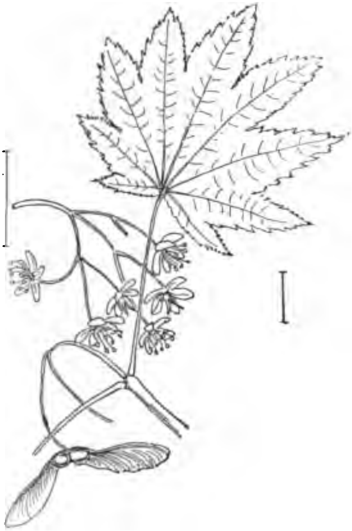


Fig. 109. — Round-leaved Maple.

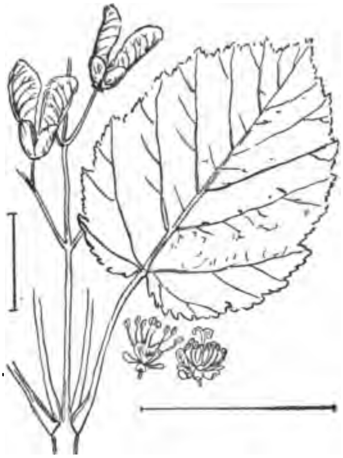


Fig. 110. — Tartarian Maple.

The shrubby maples wild in America and often cultivated are: Mountain Maple (103) — Acer spicàtum — with 3-lobed coarsely serrated leaves and dense upright clusters of flowers (June) and fruit; and Striped Maple (104) — Acer pennsylvánicum — with greenish white-striped bark. The leaves of the striped maple are large, 6 to 8 inches long, with 3 finely serrated lobes. The flower-clusters are drooping, in spring. The best, most varied and beautiful of the shrubby maples are those of China and Japan. [Layers; twig cuttings; seeds.]

KEY TO THE SHRUBBY MAPLES

* Leaves compound (pinnate) of usually 3 (3–7) irregularly notched blades. **Ash-leaved Maple** (102) or **Box 'Elder'** — Acer Negúndo.

* Leaves compound (palmate) of 5–9 narrow, deeply-notched blades.
Varieties of Japan Maple (105) — Acer palmàtum:
dissèctum has green blades.
ornàtum has deep red blades.
ròseo-píctum has green blades marked with white and green spots.
aùreum has yellow blades.
sanguíneum has bright red blades.

* Leaves generally 3- (rarely 5-) lobed. (**A.**)

A. Lobes acute at tip and fully notched. (**B.**)

B. Leaves 1½–3½ inches long with long terminal lobe. **Siberian Maple** (106) — Acer Ginnàla.

B. Leaves 2½–4½ inches long with coarsely serrated lobes. **Mountain Maple** (103) — Acer spicàtum.

B. Leaves 6–8 inches long, finely serrate; bark green with white lines; usually a tree. **Striped** or **Goosefoot Maple** (104) **Moosewood** — Acer pennsylvánicum.

A. Lobes all rounded and entire or with blunt teeth; flower-clusters erect. (**C.**)

C. Leaves 3–5-lobed, the lobes entire or the middle one slightly 3-lobed, dull green in some, varieties variegated with white dots or blotches, 1½–3½ inches long; fruit broadly spreading. **Field Maple** or **English Corkbark Maple** — (107) Acer campéstre.

C. Leaves 3-lobed, thick and nearly evergreen, shiny above and glaucous beneath; fruit slightly spreading. **Montpelier Maple** (108) — Acer monspessulànum.

* Leaves rounded, vine-like with 7–11 short, pointed, doubly serrated lobes. **Vine Maples.** (**D.**)

D. Stems of leaves and fruit smooth. **Round-leaved Maple** (109) — Acer circinàtum.

D. Stems of leaves and fruit downy when young. **Japan Vine Maple** — Acer japónicum.

* Leaves rounded and deeply 5–11-lobed, the lobes pointed and doubly serrated. (**E.**)

E. Stems of leaves and fruit smooth. **Japan Maple** (105) — Acer palmàtum,

E. Stems of leaves and fruit downy when young. Parson's Japan Maple — Acer japónicum Pársonsi.

* Leaves radiate-veined but margin without distinct lobes; usually a tree. Tartarian Maple (110) — Acer tatáricum.

* Leaves feather-straight-veined; usually a tree. Hornbeam Maple — Acer carpinifòlium.

Staphylèa. The Bladder Nuts are shrubs with usually 3-(3–7-) bladed compound opposite deciduous leaves and swollen bladder-like fruit. They have handsome light colored bright green leaves and white or greenish flowers in spring. They are good plants for the shrubbery and do best in somewhat moist rich soil and grow well in partial shade. The parts of the flowers are separate and have 5 sepals, 5 petals, and 5 stamens. The fruit is a 2- or 3-celled inflated pod with 1 to few rather large bony seeds in each cell.

[Seeds; layers; suckers.]

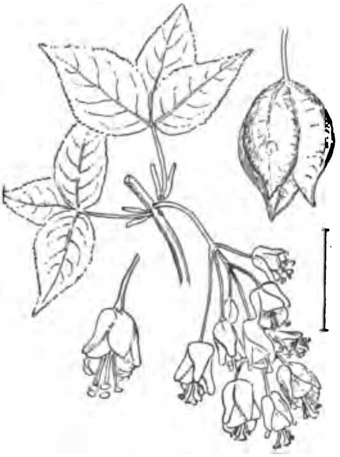


Fig. 111. — American Bladder Nut.

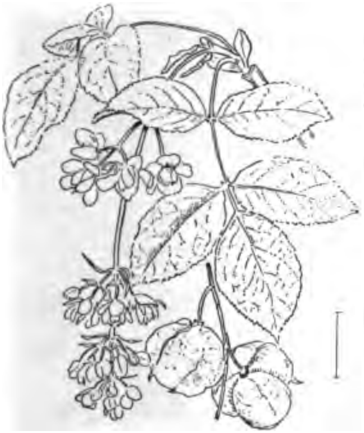


Fig. 112. — European Bladder Nut.

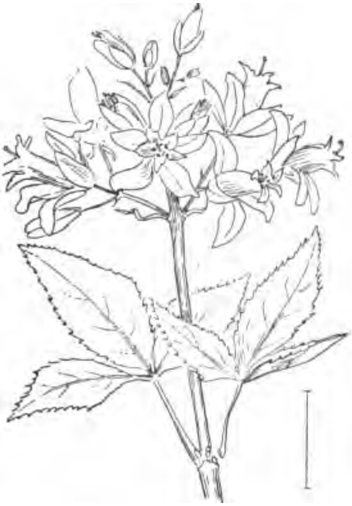


Fig. 113. — Caucasus Bladder Nut.

KEY TO THE SPECIES OF STAPHYLEA

* Leaves with 3 blades. (**A.**)

A. All the blades short-stalked with serrate awned edges 1½–2½ inches long; fruit 2-lobed and flattened, about an inch long; small shrub to 6 feet, from Japan. JAPAN BLADDER NUT — Staphylea Bumálda.

A. End blade long-stalked, all finely serrated; upright shrub with stout branches 6–15 feet high; pod 1½–2 inches long. AMERICAN BLADDER NUT (111) — Staphylea trifòlia.

A. Similar to the last but the blades smoother and nearly orbicular; fruit larger, — 2–5 inches long. CALIFORNIA BLADDER NUT — Staphylea Bòlanderi.

* Leaves with 3–7 blades. (**B.**)

B. Cluster of flowers narrow and raceme-like and pendulous; upright shrub sometimes tree-like, 6–15 feet high; bladder about an inch long. EUROPEAN BLADDER NUT (112) — Staphylea pinnàta.

B. Cluster broad, upright or somewhat nodding; blades 3–5; bladder 1–2 inches long. CAUCASUS BLADDER NUT (113) — Staphylea cólchica.

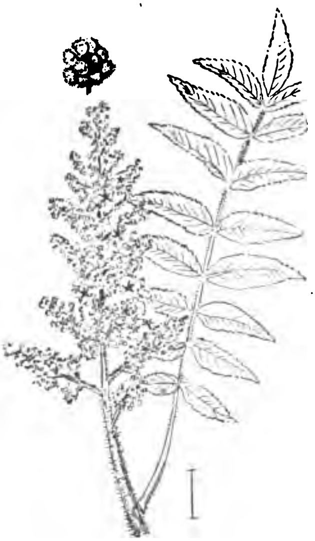


FIG. 114. — Staghorn Sumach.

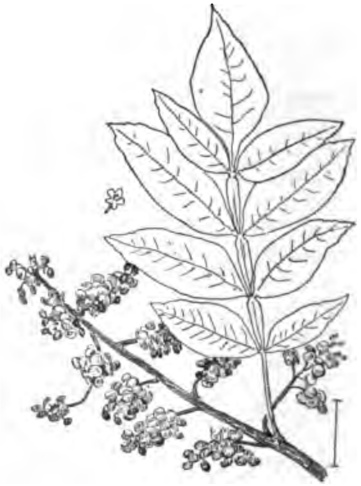


FIG. 115. — Mountain Sumach.

Rhùs. The SUMACHS are a large group (100 species) of interesting plants of mainly rather small tree-like growth generally 15 feet or less high and so may be considered as shrubs. Most species have alternate pinnate leaves and large clusters of small berry-like drupes which remain on the plants through the winter; these are often of bright red or purple color. The flowers are small and inconspicuous and the sap often milky.

The tallest species, STAGHORN SUMACH (114) — Rhus typhìna, — grows 10 to 30 feet high and has velvety-hairy stems. The crimson-hairy fruit is very conspicuous, terminating all stems. The leaves have 11 to 31 smooth notched blades (in var. laciniàta they are so deeply notched as to make them twice-pinnate).

Three species have the stalk between the blades broadly margined or winged. The one with entire

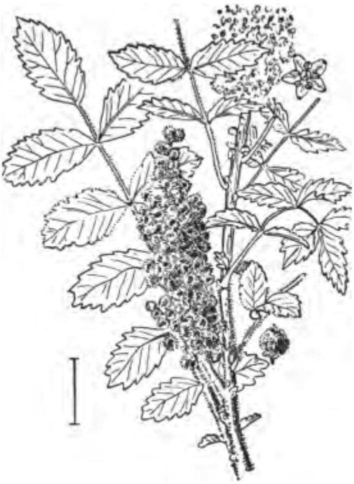


FIG. 116. — Elm-leaved Sumach.

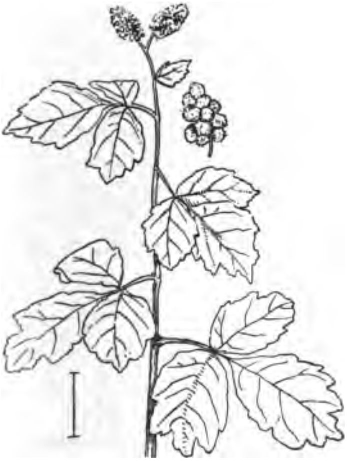


FIG. 117. — Fragrant Sumach.

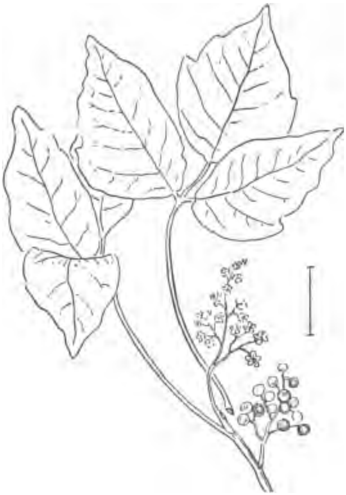


FIG. 118. — Poison 'Ivy.'

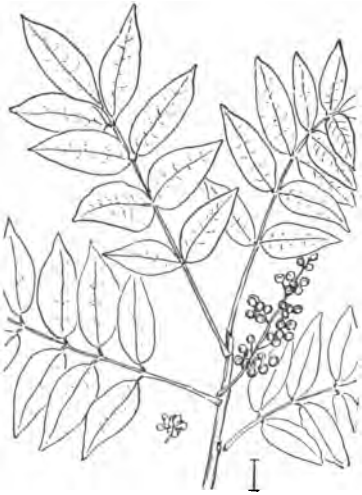


FIG. 119.—Poison Sumach.

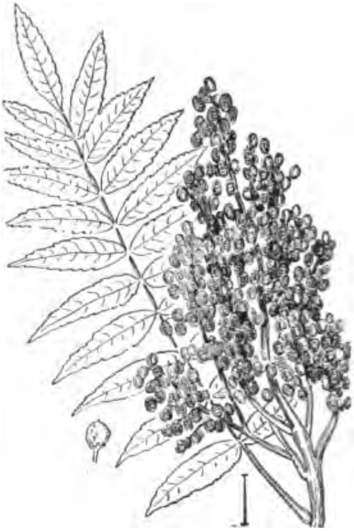


FIG. 120.—Smooth Sumach.

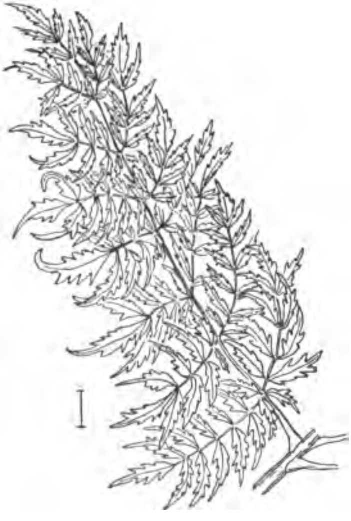


FIG. 121.—Cut-leaved Sumach.

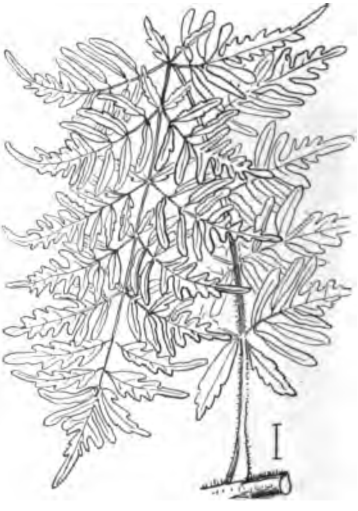


FIG. 122.—Fern-leaved Sumach.

blades is **MOUNTAIN SUMACH** (115) — Rhus copallina; with finely toothed blades, **JAPAN SUMACH** — Rhus semialàta and var. Osbéckii; with coarsely toothed blades, **EUROPEAN** or **ELM-LEAVED SUMACH** (116) — Rhus Corièria.

The smallest species with only 3 aromatic blades is the **FRAGRANT SUMACH** (117) — Rhus canadénsis or aromática.

Besides these with compound leaves there are two species with simple rounded leaves, sometimes placed in a separate genus, Cótinus. These are called **SMOKE-TREES** because of the delicate feathery growths which form after the flowers in early summer.

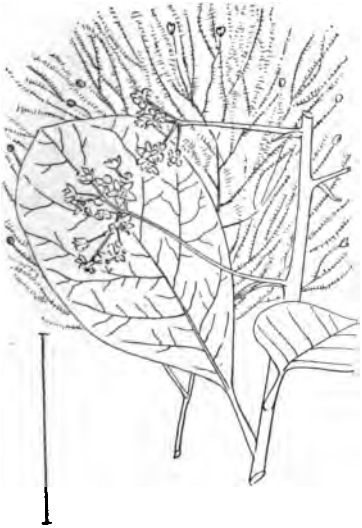


FIG. 123. — Smoke Bush.

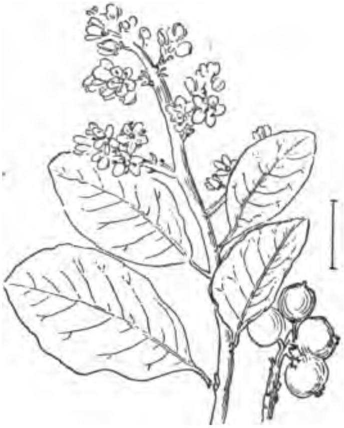


FIG. 124. — Evergreen Sumach.

The above are nearly all in general cultivation and about all that can be safely cultivated, as several of the others are very poisonous to the touch to many people. Most of the sumachs have brilliant red and yellow colors in their autumn foliage. [Seeds; suckers; layers; root cuttings.]

KEY TO THE SUMACHS

* Leaves deciduous, compound of 3 blades. (**A.**)

A. Berries bright red; blades crenate, sometimes lobed, aromatic. **FRAGRANT SUMACH** (117) — Rhus canadénsis (R. aromática).

A. Berries gray; plant very poisonous, usually climbing by rootlets. When erect, Poison 'Oak'; when climbing, **POISON 'IVY'** (118) — Rhus Toxicodéndron.

* Leaves deciduous, composed of many (7–31) blades (or twice-pinnate). (**B.**)

B. Stem of leaves winged between the blades; fruit red. (**C.**)

C. Blades (9–21) about entire, smooth above; berries hairy. Mountain Sumach (115) — Rhus copallina.

C. Blades (9–21) finely toothed, brown-hairy beneath. Japan Sumach — Rhus semialàta (R. Osbéckii).

C. Blades (11–15) coarsely toothed, leaf-stem hairy. European or Elm-leaved Sumach (116) — Rhus Corìaria.

B. Stem of leaves without wings between the blades. (**D.**)

D. Blades (7–15) without notches, smooth on both sides; berries white; plants very poisonous to the touch. (**E.**)

E. Berries small, pea-like; in moist ground. Poison Sumach (119) — Rhus Vérnix (R. venenàta).

E. Berries large — cherry-like; from Asia. Lac Sumach — Rhus succedànea.

D. Blades (11–13) sharply serrate; not poisonous; berries red; stem smooth. (**F.**)

F. Blades regularly serrate; shrub to 15 feet. Smooth Sumach (120) — Rhus glàbra.

F. Blades deeply and irregularly cut; shrub to 8 feet. Cut-leaved Sumach (121) — Rhus glàbra laciniàta.

D. Blades hairy beneath; berries red. (**G.**)

G. Stem velvety-hairy; tall, 10–30 feet. (**H.**)

H. Blades (11–31) regularly notched. Staghorn Sumach (114) — Rhus typhìna (R. hírta).

H. Blades deeply and irregularly cut. Fern-leaved Sumach (122) — Rhus typhìna laciniáta.

G. Stem less velvety; blades 9–13; low, nearly procumbent; poisonous; fruit red; southern. Dwarf Sumach — Rhus pùmila.

G. Stem slightly hairy when young; tree-like, 20–30 feet high; hardy only South; very poisonous; from Japan. Varnish or Lacquer Tree — Rhus vernicífera.

* Leaves deciduous, simple, rounded at tip; fruit generally abortive and plume- or smoke-like, Cótinus. (**I.**)

I. 10–15 feet high. Smoke Bush (123) or Venice Sumach — Rhus Cótinus (Cotinus Cótinus).

I. 20–40 feet high. Wild Smoke-tree or Chittam Wood — Rhus Cotinoìdes (Cotinus Cotinoìdes).

* Leaves evergreen, usually simple (occasionally with 3 blades), entire-edged; low, 2–8 feet high; hardy only in the extreme South; from California. (**J.**)

J. Small, slightly hairy leaves. Evergreen Sumach (124) — Rhus integrifòlia.

J. Larger and smoother leaves. Rhus ovàta.

Sophòra. The Sophoras form a rather large group of evergreen and deciduous trees, shrubs, and herbs, but few of them are in cultivation in America. The leaves are alternate, odd-pinnate, and in the different species range in number of blades from 5 to over 50. The clustered white, pinkish, purplish, or yellow pea-like flowers are in most species less than an inch long, but in one of the evergreen species are nearly 2 inches long. The fruit is a jointed pod, resembling a string of beads with a globular seed in each joint. The evergreen species can be grown only in the Gulf states and southern California. The commonest species in cultivation, Japan Pagoda Tree (125) — Sophora japónica — is a slow-growing, generally shrubby plant with 11 to 21 oblong blades. The bark of the young twigs is green. The cream-white clustered flowers bloom in the late summer. This sometimes grows to the height of 50 feet.

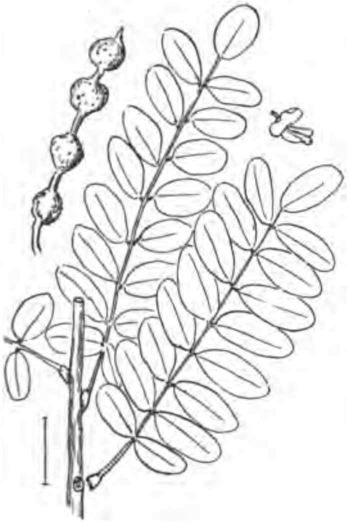


Fig. 125. — Japan Pagoda Tree.

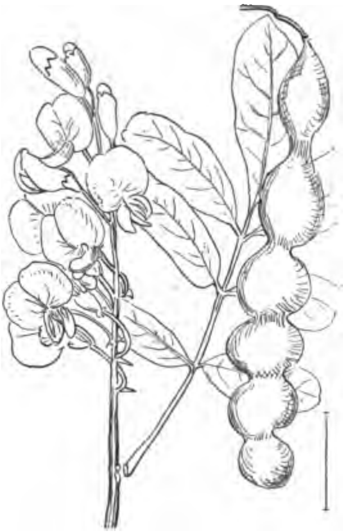


Fig. 126. — Coral Bean.

[Seeds ; twig cuttings ; layers].

KEY TO THE SOPHORAS IN CULTIVATION

* Leaves deciduous ; flowers in terminal compound clusters (panicles), in late summer. (**A.**)

A. Leaves of 5–21 blades 1–2 inches long ; flowers yellowish white ½ inch long in loose clusters 10–15 inches long ; shrub or tree to 50 feet. JAPAN PAGODA TREE (125) — Sophora japónica.

A. Leaves of 11–17 blades 2–3½ inches long ; flowers white, over ½ inch long ; pod 1–5-seeded and flattened ; tree. **FLAT-PODDED PAGODA TREE** — Sophora platycárpa.

* Leaves evergreen ; hardy only South ; flowers in early spring. (**B.**)

B. Flowers violet in terminal racemes, very fragrant ; the 3–4 seeds bright scarlet in white hairy pods 1–7 inches long and ½–¾ inch thick ; small tree or shrub with slender trunk and upright branches ; blades 7–13, leathery, ½ inch long. CORAL BEAN (126) — Sophora secundiflòra.

B. Flowers yellow in axillary racemes. (**C.**)

C. Pod 4-winged, 7 inches long ; blades of the leaves very numerous, nearly orbicular, ¼–½ inch long ; racemes pendulous of 2–8 flowers 1½ inches long. PELU TREE — Sophora tetráptera.

C. Pod rounded and not winged, 1–4-seeded ; blades 21–45, ¾–1 inch long ; flowers ¾–1 inch long in short racemes ; entire plant densely hairy. LARGE-FRUITED SOPHORA — Sophora macrocárpa.

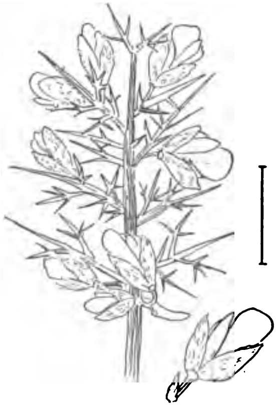


FIG. 127. — Furze.

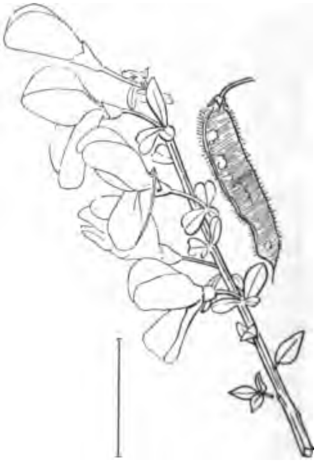


FIG. 128. — Scotch Broom.

Úlex europæus. Furze (127) or Gorse is a leafless thorny plant (2–5 feet), with large, ¾ inch, fragrant yellow pea-like flowers in the axils of the upper thorns, cultivated for the showy flowers which bloom April to June and frequently again in September and October; oblong pod ½ inch long. It is especially suited for seaside planting and grows best in sandy or gravelly soil. The green twigs are striped. There are other species of the genus, much less hardy, which might be cultivated South.

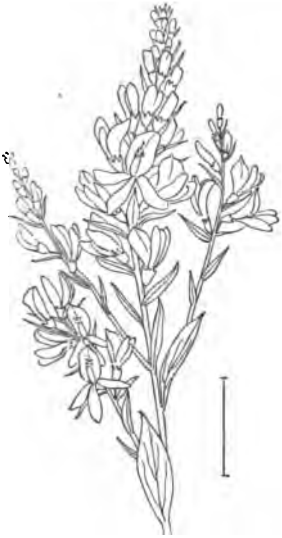


Fig. 129. — Dyer's Greenweed.

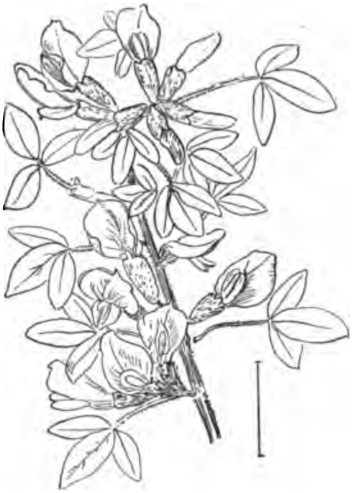


Fig. 130. — Hairy Broom.

(See key, to this and the following two genera, after Genísta.)

[Seeds; twig cuttings.]

Cýtisus. The Brooms are a large group (45 species) of more or less leafless shrubs with large yellow, white, or purple pea-like flowers and elongated pea-like pods. The leaves, if enlarged and complete, are 3-bladed and alternate but are often reduced to a single blade or almost absent. Most of the species bloom in May and June. The commonest in America is Scotch Broom (128) — Cytisus scopàrius — 5 to 10 feet high with erect slender angular green branches and leaf-blades ¼ to ½ inch long. The flowers, ¾ inch long, are usually yellow with more or less of a crimson tinge. The pods are nearly black with hairy edges, 1–2 inches long, containing several seeds and ending in a slender coiled tip. (See key after next genus.) [Seeds; twig cuttings; layers.]

Genista. The true GENISTAS (florists' Genistas are usually Cýtisus) have pea-like yellow flowers and few alternate simple entire-edged leaves. The calyx-lobes are longer and more slender in true Genistas and the pods are shorter.

While neither genus is fully hardy North, and while both contain a number of species which might be worth cultivating, very few are in cultivation.

The only one needing description is probably WOAD-WAXEN or DYER'S GREENWEED (129) — Genista tinctòria an erect shrub to 3 feet with yellow flowers along the tips of the branches in early summer.

[Seeds; layers; twig cuttings.]

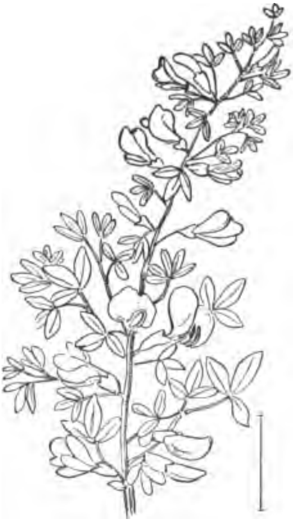


FIG. 131. — Purple Cytisus.

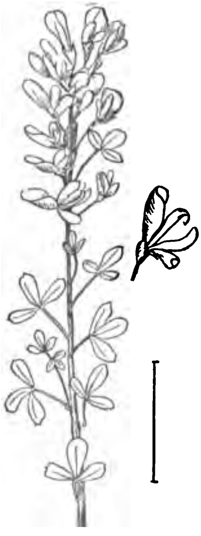


FIG. 132. — Florists' Genista.

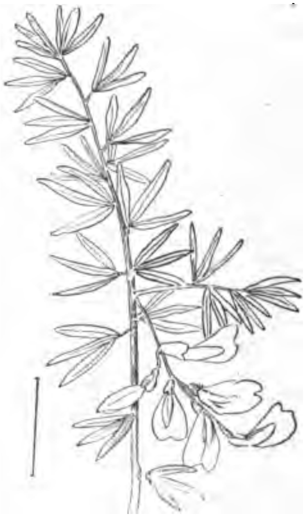


FIG. 133. — Narrow-bladed Cytisus.

KEY TO THE BROOMS AND GORSE IN CULTIVATION, INCLUDING THOSE IN HOTHOUSES NORTH OR IN THE OPEN SOUTH

* Flowers along the sides of branches not in decided clusters, either solitary or 2 or 3 in a cluster. (**A.**)

- **A.** Flowers yellow; leaves deciduous. (**B.**)
  - **B.** Pods hairy on the margins, smooth on the sides, 1–2 inches long; branches angled; erect, 5–10 feet. Scotch Broom (128) — Cytisus scopàrius.
  - **B.** Pods hairy all over, 1 inch long; branches round; blades of leaves hairy, ½–¾ inch long. Hairy Broom (130) — Cytisus hirsùtus.
- **A.** Flowers white; tender North. (**C.**)
  - **C.** Branches slender but not thread-like, grooved; erect, to 3 feet. Portugal Broom — Cytisus álbus.
  - **C.** Branches thread-like and angulate — Cytisus fílipes.
  - **C.** Branches long, slender, pubescent, round, not angulate or grooved; shrub to 12 feet; leaves all 3-bladed. Proliferous Laburnum or Tagasaste — Cytisus prolíferus.
- **A.** Flowers pink to purple; procumbent shrub frequently grafted on an erect stem to form a weeping plant; tender North. Purple Cytisus (131) — Cytisus purpùreus.

* Flowers in rounded terminal heads, yellow or brownish when fading, nearly 1 inch long, July, August; pod hairy, 1–1½ inches long; branches round and hairy; blades ¾–1 inch long; hardy to Washington. Cluster-flowered Laburnum — Cytisus capitàtus.

* Flowers yellow in elongated terminal clusters. (**D.**)

- **D.** Leaves evergreen; branches grooved; hardy only South. (**E.**)
  - **E.** Blades widening towards tip, wedge-shaped. (**F.**)
    - **F.** Blades ½–¾ inch long, pubescent beneath. Cytisus cándicans.
    - **F.** Blades ¼–½ inch long, scabby beneath. Cytisus maderénsis.
    - **F.** Blades ¼–¾ inch long, pubescent on both sides; flowers in one-sided clusters. (**G.**)
      - **G.** Racemes shortened; blades usually under ½ inch long (the Genísta of florists). Yellow or Florists' Genista (132) — Cytisus canariénsis.
      - **G.** Racemes longer, 3–5 inches long; blades usually over ½ inch long. A hybrid of garden origin and better than the last. Racemed Cytisus — Cytisus racemòsus.
  - **E.** Blades linear, ½–1 inch long with rolled edges; to 3 feet. Narrow-bladed Cytisus (133) — Cytisus linifòlius.

D. Leaves deciduous, blades ⅓–1 inch long; branches round, pubescent; racemes slender, — 3–8 inches long, June, July; hardy to middle states. BLACK-ROOTED BROOM — Cytisus nìgricans.

D. Leaves deciduous of one lanceolate blade; branches grooved, green; flowers small, in early summer; plant 1–2 feet. WHIN or DYER'S GREENWEED (129) — Genista tinctòria.

D. Leaves almost entirely absent, found only on vigorous shoots near the ground; very spiny and rigid shrub; flowers fragrant, ¾ inch long; calyx 2-lobed. FURZE or GORSE (127) — Ulex europæ̀us.

Labúrnum. The GOLDEN CHAINS are rather trees than shrubs but in the North they are apt to grow somewhat bushy. They receive their common name from the slender drooping clusters of large, generally yellow, pea-like flowers in late spring. The leaves are compound of 3 oblong usually entire-edged blades. The pods (2 inches long) are hairy with one thick edge and black or brown seeds. The tallest of these plants is the SCOTCH LABURNUM (134)—Laburnum alpìnum,— which grows occasionally to the height of 30 feet with late flowers (June) and brown seeds. The commonest species in cultivation is GOLDEN CHAIN or BEAN TREE (135)— Laburnum vulgàre, — which grows to the height occasionally of 20

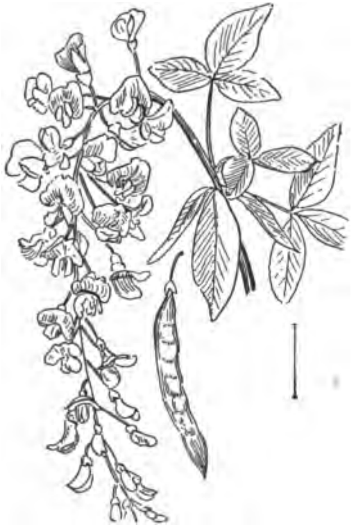


FIG. 134. — Scotch Laburnum.

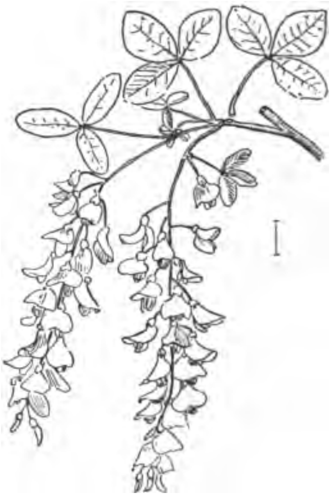


FIG. 135. — Golden Chain.

feet and has many garden varieties. One of these varieties has yellow foliage, aùreum; another, curled foliage, bullàtum; another, lobed

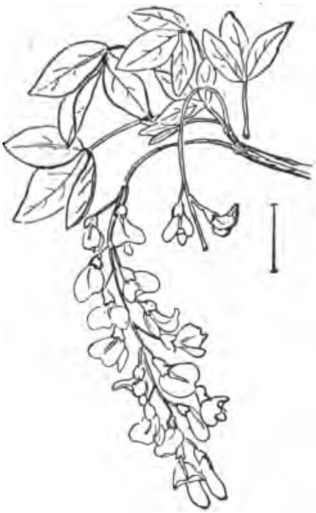


Fig. 136. — Adam's Laburnum.

blades, quercifòlium; weeping, péndulum; small narrow blades, Carlièri; and crowded leaves, sessilifòlium. (The last-named is supposed to be a graft hybrid.) [Seeds; layers.]

KEY TO THE LABURNUMS

- * Flowers yellow, large (¾ inch long), in silky-hairy racemes 4–8 inches long; pod 2 inches long, hairy; seeds hairy. Golden Chain or Bean Tree (135) — Laburnum vulgàre.
- * Flowers smaller in longer and more slender racemes; pod thin with one edge winged; seeds brown. Scotch Laburnum (134) — Laburnum alpìnum.
- * Flowers somewhat purplish, rarely pure yellow. Adam's Laburnum (136) — Laburnum Ádami.

Amórpha. The Amorphas are handsome hardy deciduous shrubs with alternate many-bladed pinnate leaves, purple or blue (rarely white) flowers in erect terminal clusters and short (½ inch or less) 1- or 2-seeded pods. There is a tall species, 5–20 feet, False or Bastard Indigo

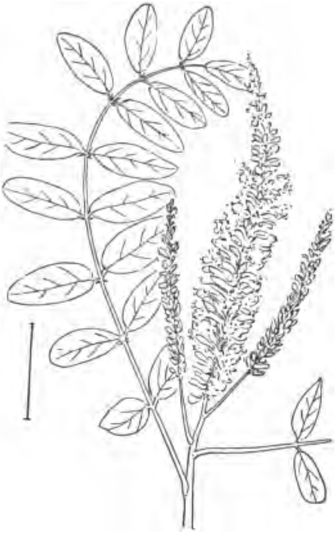


FIG. 137.—Bastard Indigo.

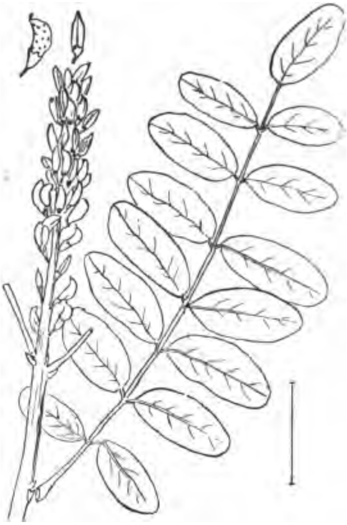


FIG. 138.—Bastard Indigo (in fruit)

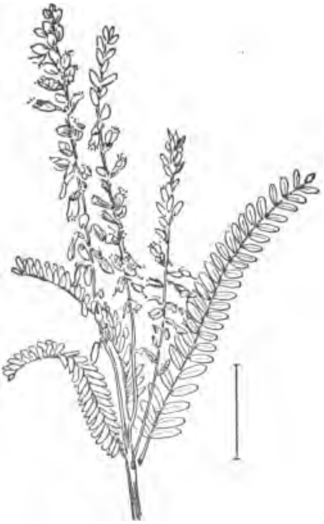


FIG. 139.—Downy Amorpha.

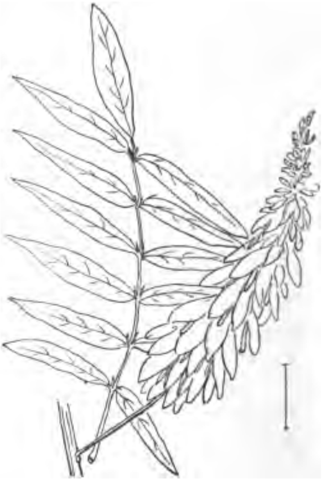


FIG. 140.—Chinese Indigo.

(137) (138) — Amorpha fruticòsa — with 11- to 25-bladed leaves and violet-purple flowers, May to July; and a low bush, 1–3 feet high, LEAD PLANT or DOWNY AMORPHA (139) — Amorpha canéscens — with 15 to 51 lead-colored blades, bright blue flowers (July, August) and whitish branches. A species only slightly shrubby at base, DWARF INDIGO — Amorpha herbàcea — is grayish-hairy all over with crowded leaves, growing to the height of 2 to 4 feet; the blades are numerous, 11–37, with black glands on the under side; it blooms in spring with white or purple flowers.

Besides these three, the common ones in cultivation, there are several others which may be found in the South. They can all be recognized by the peculiar lopsided flowers of but one petal in terminal spike-like clusters, 10 exserted stamens united at base, and the short 1- to 2-seeded pods. The blades of the leaves, if held to the light, are seen to be dotted. [Seeds; twig cuttings; layers; suckers.]

Indigófera. The INDIGO plants are shrubs or herbs mainly cultivated for use rather than ornament but a few shrubby species are, in the South, raised for their beauty. The flowers are small, pea-shaped, in axillary racemes and the fruit are elongated pods. The leaves are odd-pinnate with 7 to 21 blades. [Twig cuttings; seeds.]

KEY TO THE ORNAMENTAL INDIGOFERAS

* Clusters of flowers longer than the leaves, rosy-red. (**A.**)
  A. Weak-growing almost climbing shrub with 13–17 sharp-pointed blades to the leaves; slender stems red-tinged. CHINESE INDIGO (140) — Indigofera décora.
  A. Erect-growing with 17-21 broader and blunter blades to the leaves. Indigofera macróstachys.
* Clusters of flowers not longer than the leaves. Smooth erect shrub with 9-17 oblong to rounded blades to the leaves. AUSTRALIAN INDIGO — Indigofera austràlis.

Robínia. The LOCUSTS are generally tall trees, a few species are always shrubs, and one is a bushy tree. All have beautiful clustered pea-shaped flowers, odd-pinnate alternate leaves and pea-shaped pods. BRISTLY LOCUST or ROSE 'ACACIA' (141) — Robinia híspida — grows 2 to 8 feet high with bristly-hairy twigs and leaves, beautiful large rose-colored flowers (May to July), and 9- to 13-bladed leaves, CLAMMY LOCUST — Robinia viscòsa — is a small tree, 10 to 30 feet, with sticky stems, leaf-stalks, and pods. The blades of the leaf range from 11 to 27; the flowers are pink or rose-colored in racemes 2 to 4 inches long of 6 to 15 flowers; the flat

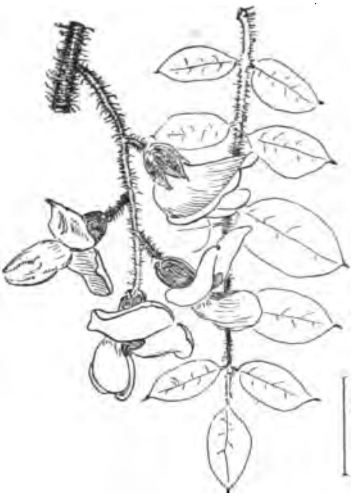


FIG. 141. — Rose 'Acacia.'

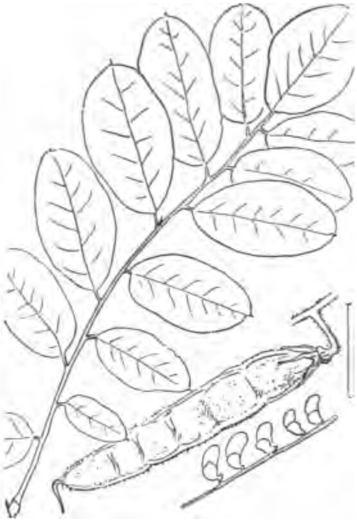


FIG. 142. — Western Locust.

pods are 2 to 3 inches long and 2 to 7-seeded. WESTERN LOCUST (142) — Robinia neo-mexicàna — is a prickly shrub 5 or 6 feet high with rose-colored flowers and twigs covered with glandular, but not gummy, hairs; this has two stout prickles at the bases of the leaves, like the common locust.

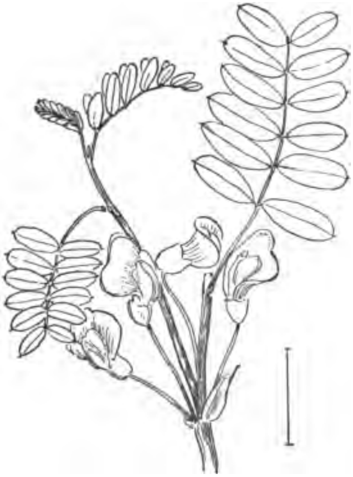


FIG. 143. — Siberian Pea Tree.

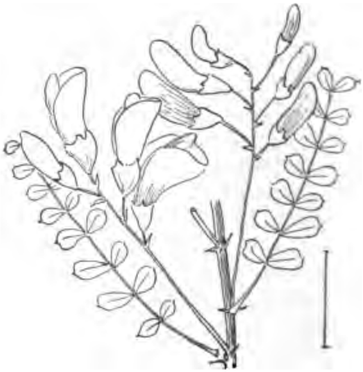


FIG. 144. — Small-bladed Pea Tree.

Besides these three species, which are the common shrubby forms in cultivation, there are a number found in the South which will doubtless soon be tried and may prove desirable. The smallest of these is Robinia nàna, which grows only to the height of a foot or two with almost an unbranched stem and purple flowers ¾ inch long with white markings.

[Seeds; suckers; twig cuttings.]

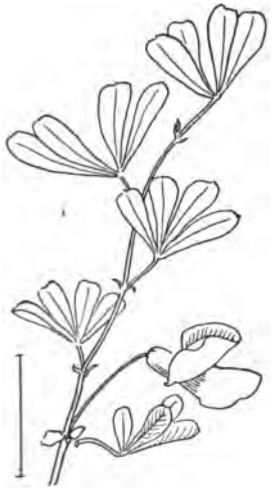


Fig. 145. — Tall Caragana.

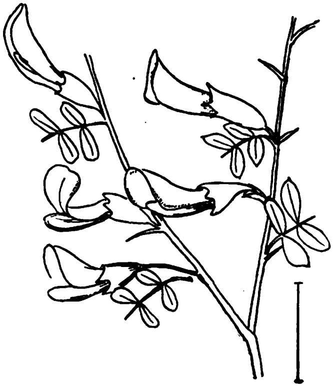


Fig. 146. — Chinese Caragana.

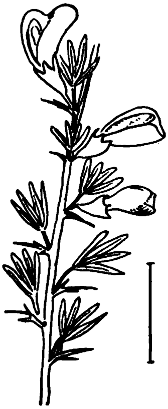


Fig. 147. — Dwarf Caragana.

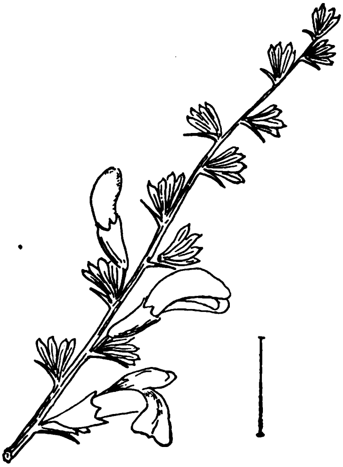


Fig. 148. — Large-flowered Caragana.

Caragàna. The PEA TREES are generally shrubby in growth and can be most readily known by the even number of blades to the pinnate leaves, yellow flowers, and linear pods. There is but one species which is tall enough to be considered a tree. This is the SIBERIAN PEA TREE (143) — Caragana arboréscens, — which may grow to the height of 20 feet, but is usually bushy; it has 8- to 12-bladed leaves, yellow flowers ¾ inch long (May, June), and cylindric pods; there is a weeping variety of this, péndula. SMALL-BLADED PEA TREE (144) — Caragana microphýlla — grows 4 to 6 feet high, has 12 to 18 very small blades (⅛–¼ inch) to the leaves and flat pods. The remaining species have but 4 blades to the leaves; of these one from Siberia (6–10 feet high) has the blades so close together as to appear like a 'four-leaved clover'; three species have persistent spines at the tips of the 4-bladed leaves and are less than 5 feet high.

[Seeds (soaked in warm water); root cuttings; layers.]

KEY TO THE PEA TREES

* Blades 8–12, ½–1 inch long; flowers yellow, ¾ inch long, 2 to 4 in a cluster (May, June); 10–20 feet high. SIBERIAN PEA TREE (143) — Caragana arboréscens.

* Blades 12–18, ⅛-¼ inch long; flowers yellow, ¾ inch long, 1 to 2 in a cluster; shrub 4–6 feet high. SMALL-BLADED PEA TREE (144) — Caragana microphýlla.

* Blades 2–4. (**A.**)

A. Blades 4, like a 4-bladed clover leaf, without spines; 6–10 feet. TALL CARAGANA (145) — Caragana frutéscens.

A. Leaves spiny-tipped; shrub 1–4 feet. (**B.**)

B. Blades in two somewhat distant pairs; flowers reddish yellow, 1¼ inch long. CHINESE CARAGANA (146) — Caragana Chámlagu.

B. Blades together. (**C.**)

C. Flowers golden, ¾ inch long. DWARF CARAGANA (147) — Caragana pýgmæa.

C. Flowers 1¼ inch long. LARGE-FLOWERED CARAGANA (148) — Caragana grandiflòra.

Halimodéndron argénteum. SALT BUSH (149) is a hardy deciduous shrub 4 to 10 feet high with whitish spiny branches, rosy-purplish pea-shaped flowers and compound, usually 4-bladed leaves with stinging spines at their tips. The flowers, nearly an inch long, are in axillary clusters in May to July. The brown inflated pods 6 to 7 inches long are ripe in September. The blades of the leaves are rather narrow near the tips.

[Seeds; layers; twig cuttings.]

Colûtea. The Bladder Sennas are deciduous shrubs with alternate odd-pinnate leaves. The flowers are pea-like, yellow to brownish red, in axillary clusters June to September. The fruit is an inflated bladder-like many-seeded pod. These plants are not fully hardy north of New Jersey. [Seeds; twig cuttings.]

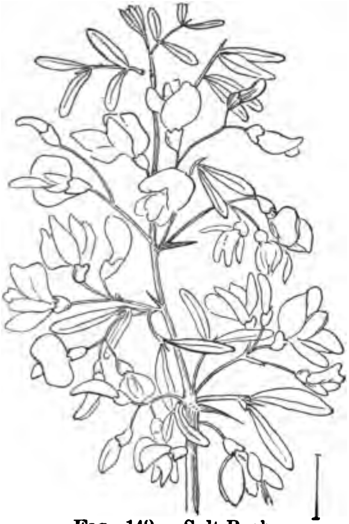


Fig. 149. — Salt Bush.

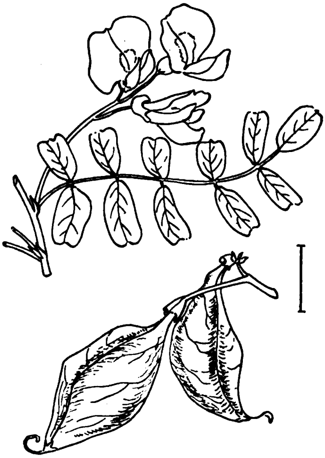


Fig. 150. — Tall Colutea.

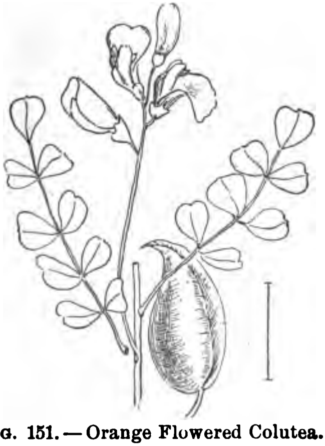


Fig. 151. — Orange Flowered Colutea.

KEY TO THE CULTIVATED COLUTEAS

- * Flowers lemon-yellow, ¾ inch long, 3–8 in a cluster; shrub to 15 feet; leaves with 9–13 dull green blades ½–1 inch long. TALL COLUTEA (150) — Colutea arboréscens.
- * Flowers orange to brownish, 3–6 in a cluster. (A.)
  - A. Pod closed at tip. ORANGE-FLOWERED COLUTEA (151) — Colutea mèdia.
  - A. Pod open at tip. ORIENTAL COLUTEA — Colutea orientàlis.

Lespedèza. The LESPEDEZAS or BUSH 'CLOVERS' are mainly herbaceous, but one species in cultivation is shrubby, and two others have a shrubby appearance as used in borders. These three species are extensively cultivated for their flowers and are practically hardy to Massachusetts. The Lespedezas have alternate 3-bladed leaves, the end blade at some distance from the side blades. The pea-shaped flowers in these species are purple (or white) in axillary racemes. The upper parts of these plants show much smaller leaves than the lower and this gives them the peculiar bush-clover look. [Divisions.]

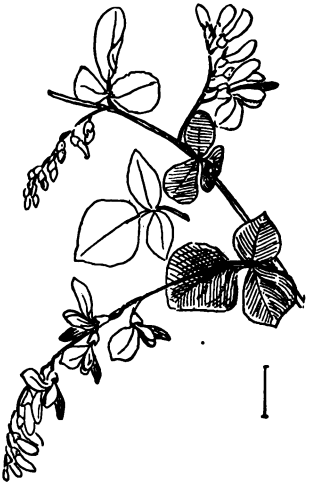


FIG. 152.— Shrubby Bush 'Clover.'

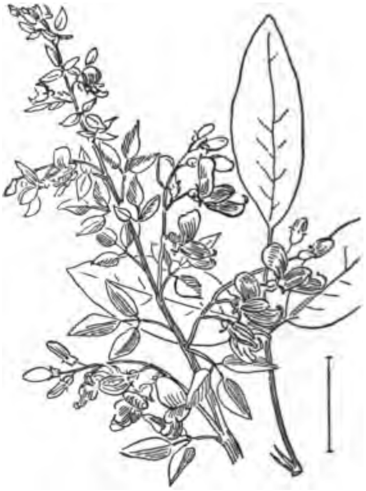


FIG. 153.— Siebold's Bush 'Clover.'

KEY TO THE MORE SHRUBBY LESPEDEZAS

* Shrubby with slender branches, 5–10 feet; blooming in July, with slightly hairy pods ¼ inch long; blades of leaves rounded. Shrubby Bush 'Clover' (152) — Lespedeza bícolor.

* Herbaceous with angular brown branches and flowers ½ inch long. (**A.**)

  A. Blooming in September with rose-purple flowers; blades of leaves elongated. Siebold's Bush 'Clover' (153) — Lespedeza Sièboldi.

  A. Blooming late in September with large white flowers; blades of leaves broader and less pointed. Japanese Bush 'Clover' — Lespedeza japónica.

Coronílla. The Coronillas are shrubs or herbs with odd-pinnate leaves and purple or yellow pea-shaped flowers in rounded clusters, like the clovers but larger and with fewer blossoms.

Scorpion 'Senna' (154) — Coronilla Émerus — is a dense shrub 4 to 6 feet high, hardy only South. Leaves deep glossy-green (evergreen South), of 5 to 7 blades broadest near their tips; flowers in clusters of about three, large, yellow tipped with red, May to June.

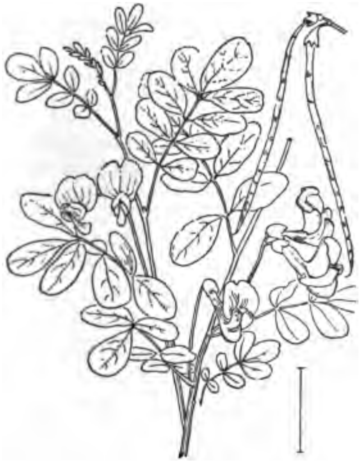


Fig. 154. — Scorpion 'Senna.'

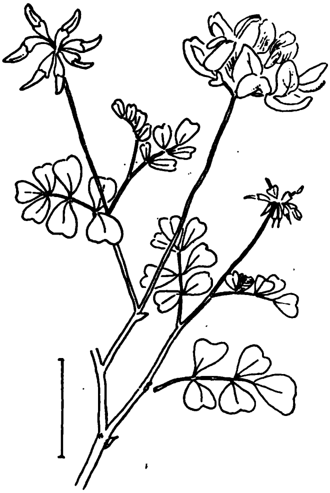


Fig. 155. — Glaucous Scorpion 'Senna.'

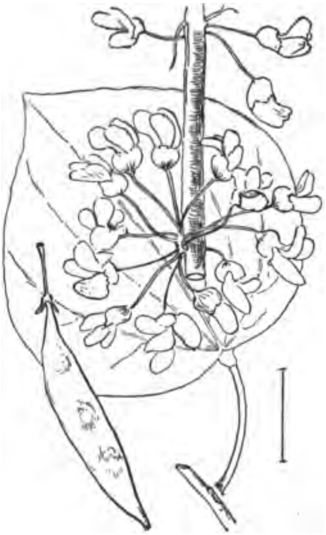


Fig. 156. — American Redbud.

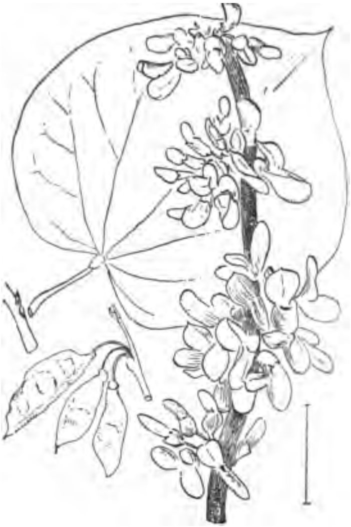


Fig. 157. — Chinese Redbud.

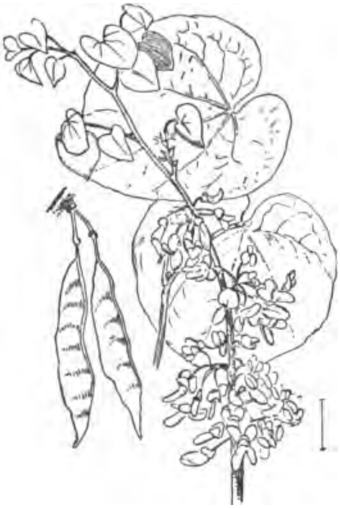


Fig. 158. — European Redbud.

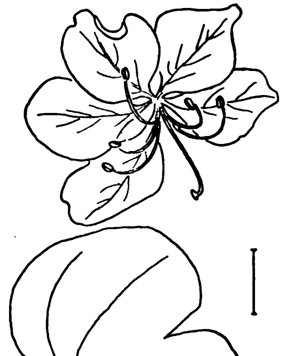


Fig. 159. — White-flowered Bauhinia.

Glaucous Scorpion 'Senna' (155) — Coronilla glaùca — is a smooth shrub 2 to 4 feet high; leaves whitish with a bloom of 5 to 7 blunt blades; flowers 7 to 8 in an open cluster, yellow, fragrant in the daytime but not at night, blooming through the year in southern California.

[Fresh seeds; twig cuttings; divisions.]

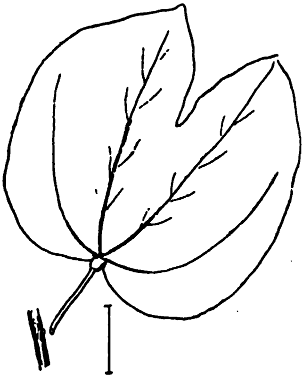


Fig. 160. — Purple-flowered Bauhinia.

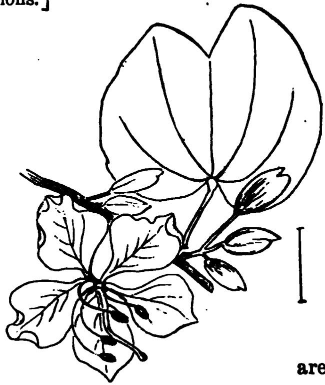


Fig. 161. — Green-and-white Bauhinia.

Cércis. The Redbuds or Judas Trees are beautiful flowering shrubs with large heart-shaped simple alternate leaves; pea-shaped purple or red flowers in early spring close clustered along the old branches and flat pea-like pods 2 to 5 inches long, in summer.

American Redbud (156) — Cercis canadénsis — is a very ornamental shrub or small tree, to 40 feet, with rosy-pink flowers ½ inch long and rather broad pods 2½ to 3½ inches long.

Chinese Redbud (157) — Cercis chinénsis — has purplish flowers, longer and narrower pods, and grows, under good conditions, even taller than the above.

California Redbud — Cercis-occidentàlis — is never more than a shrub, to 15 feet, has rose-colored flowers, blunt-tipped leaves about 2 inches wide and pods only 2 to 2½ inches long.

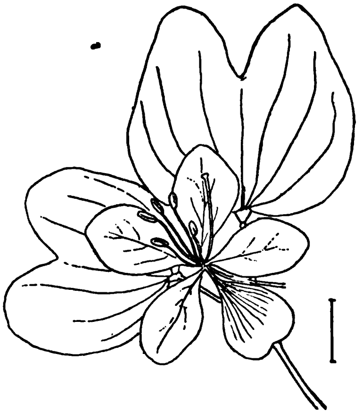


Fig. 162. — Red-flowered Bauhinia.

European Redbud (158) — Cercis Siliquástrum — grows to the height of 40 feet and has large leaves deeply heart-shaped at base (3–5 inches wide), large purplish rose (rarely white) flowers ¾ inch long and pods 3 to 4 inches long. [Seeds ; layers ; twig cuttings.]

Bauhínia. The Bauhinias or Mountain Ebony plants are tropic trees, shrubs, and vines (200 species), and can be easily recognized by the peculiar 2-lobed leaves of all the species in cultivation in this country. Between these lobes there may generally be found an awn or bristle. The flowers are very showy and of good size, ranging in color from white to purple. The fruit is a pea-like pod. (The species given do not include climbers.) All have their leaves split less than half their length. They are hardy only far south but are cultivated north in hothouses and planted out in summer. [Seeds.]

KEY TO THE BAUHINIAS

- * Leaves 4-ribbed. (**A.**)
  - **A.** Shrub 5–6 feet high ; flowers pure white, 2–3 inches broad, May–Sept. White-flowered Bauhinia (159) — Bauhinia acuminàta.
  - **A.** Shrub 6–20 feet high ; flowers of many colors and variegated, 3–5 inches broad ; pod a foot long. Purple-flowered Bauhinia (160) — Bauhinia purpùrea.
- * Leaves 5-ribbed. (**B.**)
  - **B.** Flowers white beautifully veined with green, Feb.–May ; shrub to 12 feet. Green-and-white Bauhinia (161) — Bauhinia variegàta cándida.
  - **B.** Flowers large (4 inches), rosy-colored distinctly veined with darker ; pod 1–2 feet long ; generally tree-like, 6–20 feet. Variegated-flowered Bauhinia — Bauhinia variegàta.
- * Leaves 7-ribbed ; petals alike, 1–1½ inches long, brick-red ; pod 3–5 inches long ; somewhat climbing. Red-flowered Bauhinia (162) — Bauhinia Gálpini.

Cássia. The Sennas include several hundred species of herbs, shrubs, and trees with showy (mainly yellow) flowers ; stalked, usually flat, many-seeded pods. Only a few are in cultivation. The leaves are alternate on the stem and compound with an even number of blades. The flowers have 5 spreading nearly equal petals. The plants need a sunny position. [Divisions ; seeds.]

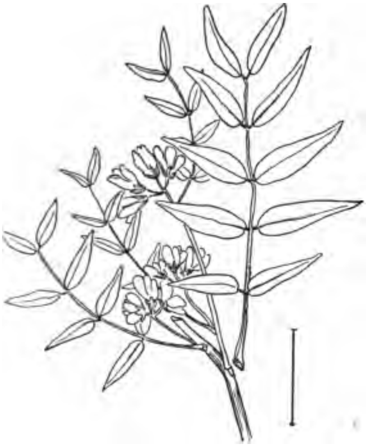


Fig. 163. — Australian Senna.

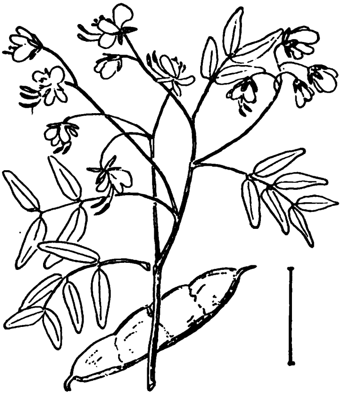


Fig. 164. — Corymbed Senna.

KEY TO THE ORNAMENTAL SENNAS

* Herbaceous but shrub-like in appearance, sometimes cultivated. Hardy. Leaves light green of 8-18 blades; flowers in axillary clusters near the tips of branches; pods linear, flat, curved, 3-4 inches long. Good for damp places. WILD SENNA — Cassia maryländica.

* Shrubs, hardy only far South. (**A.**)

A. 6-10 feet high; leaves with 12-20 narrow pointed blades; Clusters of narrow flowers shorter than the leaves, pods thin. AUSTRALIAN SENNA (163) — Cassia Sophòra.

A. 4-10 feet high; leaves with 6 somewhat curved blunt blades. CORYMBED SENNA (164) — Cassia corymbòsa.

A. Tree-like shrub with soft gray hairs all over; leaves with 6-8 narrow linear blades; flowers deep yellow. Good for dry localities. ARTEMISIA-LEAVED CASSIA — Cassia artemesioides.

Cæsalpínia. The BRASILETTO shrubs and trees are tropic. Leaves abruptly twice-pinnate; flowers with 5 stalked petals and 10 very long and bright colored stamens; the fruit is a pod. Most of the species in cultivation in this country are hardy only in Florida and southern California. The most hardy species, JAPAN CÆSALPINIA (165) — Cæsalpinia japònica,

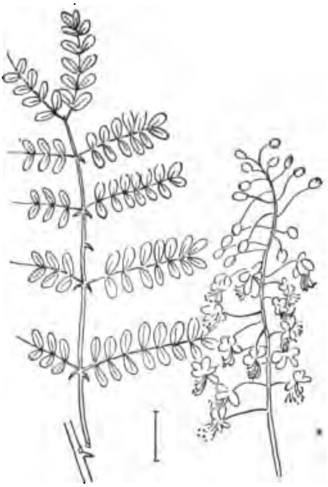


FIG. 165. — Japan Cæsalpinia.

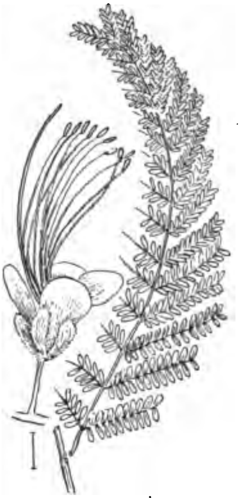


FIG. 166. — Gillies' Cæsalpinia.

— is probably hardy in southern Virginia, and one, **GILLIES' CÆSALPINIA** (166) — Cæsalpinia Gilliesii, — is hardy in the Gulf states.

[Seeds, well soaked in warm water.]

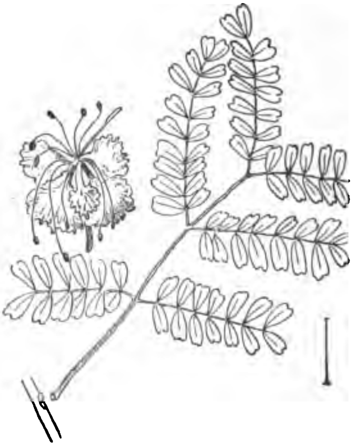


FIG. 167. — Barbadoes Pride.

KEY TO THE SPECIES OF CÆSALPINIA

* Stamens and style red and very long, extending far beyond the petals. (**A.**)

- **A.** Sepals hairy-fringed ; plant without spines or prickles. GILLIES' CÆSALPINIA or LA PLATA POINCIANA (166) — Cæsalpinia Gílliesii.
- **A.** Plant with few scattered prickles and crisped yellow petals ; evergreen. BARBADOES PRIDE (167) or DWARF POINCIANA — Cæsalpinia pulchérrima.

* Stamens not especially long or much exserted beyond the petals. (**B.**)

- **B.** Plant without prickles ; blades of the leaves ⅓–1 inch long and blunt ; flowers yellow and showy. Cæsalpinia pannòsa.
- **B.** Plant with prickles or thorns. (**C.**)
  - **C.** Pod smooth ; stamens red ; petals canary-yellow ; prickles recurved. The hardiest species. JAPAN CÆSALPINIA (165) — Cæsalpinia japónica.
  - **C.** Pod prickly with 7 black seeds ; blades of leaves 1–3 inches long ; flowers white and purple. Cæsalpinia Mìnax.

Albízzia. The ALBIZZIAS, frequently though improperly called Mimosa Trees, are tropic trees (25 species) with only one species, MIMOSA TREE (168) — Albizzia julibríssin, — hardy enough to thrive in the middle states. This has alternate leaves, twice-abruptly-pinnate, with 400–1500 small blades. These blades are entire-edged and lopsided, the midrib being near the upper edge. The pinkish flowers are feathery or silky, in summer, and the flat pods are 5 or 6 inches long. This beautiful small tree can be grown in protected places north to New York city. Its remarkable foliage makes it a very interesting plant where it can be grown. It is very late in starting growth in the spring, July in the middle states, and continues putting out new leaves till after severe frosts, even till most other deciduous trees and shrubs have dropped their foliage.

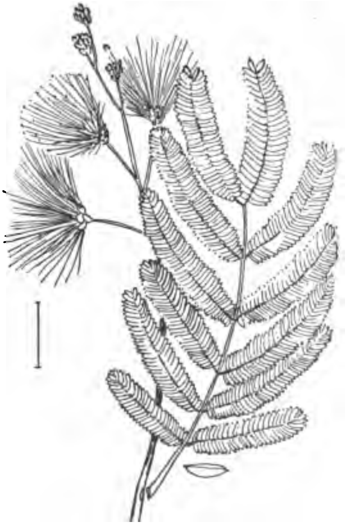


FIG. 168. — Mimosa Tree.

In the southern range of states there are a number of other species in cultivation, most of them trees. They can all be known by the numerous oblique blades on the abruptly twice-pinnate leaves.

[Fresh seeds, soaked in hot water.]

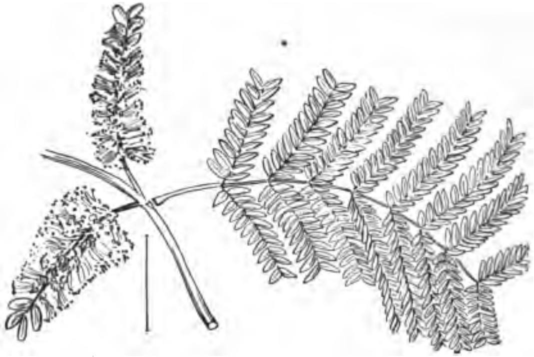


Fig. 169.—Evergreen Albizzia.

KEY TO THE SPECIES OF ALBIZZIA

- * Hardy to New York with protection; blades of leaves 500 or more, ¼ inch long and oblique; flowers in globular heads, pink. **Mimosa Tree** (168) — Albizzia julibríssin.
- * Tender species, hardy only in the Gulf states. (**A.**)
  - **A.** Flowers yellowish in cylindric axillary spikes; leaves evergreen; shrub 6–15 feet high. **Evergreen Albizzia** (169) — Albizzia lophántha.
  - **A.** Flowers in globular heads; leaves deciduous. Six or eight species of tall tropic or semitropic trees.

Acàcia. **Acacias or Wattles.** There are a number of species of Acacias out of doors in the Gulf states and in northern conservatories which are well worthy of cultivation for the beauty of foliage, as well as the brightness and peculiarity of bloom. The flowers are generally in globular clusters of fine feathery parts, and usually of some shade of yellow, from pale lemon to deep orange. To the eye they form in their foliage two entirely dissimilar groups; those with simple, thickish, sessile alternate leaves, and those with fern-like, abruptly twice-pinnate leaves. To the casual observer it would seem that the plants should form two genera, but the seedlings, or young plants, of those which, when mature, have simple leaves, have in this early stage the fern-like foliage of the other

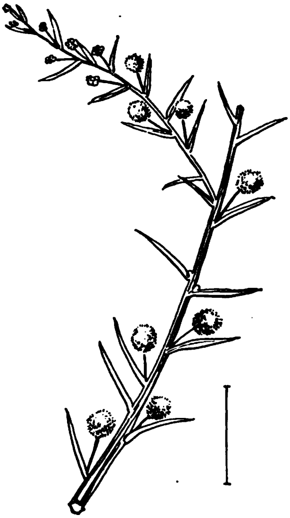


FIG. 170. — Needle-leaved Acacia.

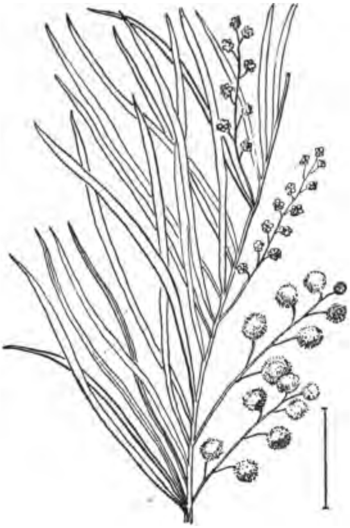


FIG. 171. — Broom Wattle.

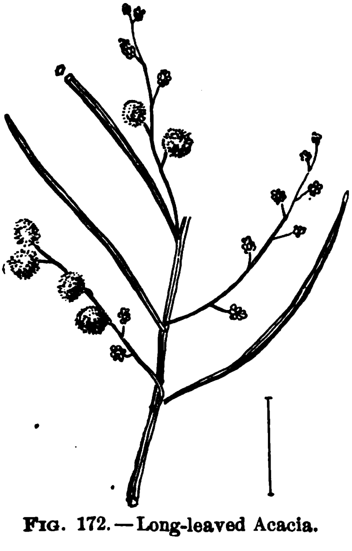


FIG. 172. — Long-leaved Acacia.

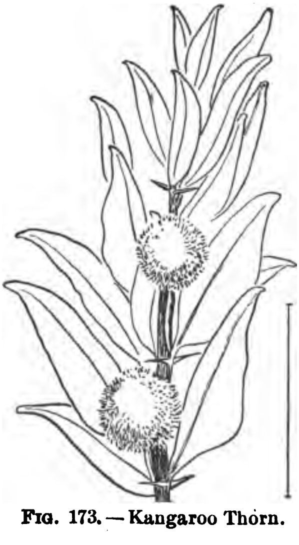


FIG. 173. — Kangaroo Thorn.

group. Occasionally the growth of vigorous shoots on old plants will have more or less of these compound leaves.

[Seed, as soon as ripe, is soaked in hot water 24 hours and then sown under glass.]

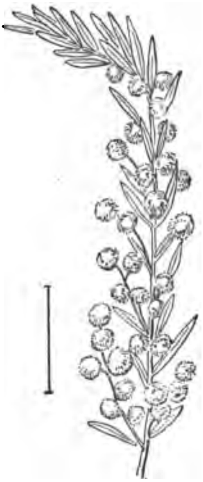


FIG. 174. — Small-leaved Acacia.

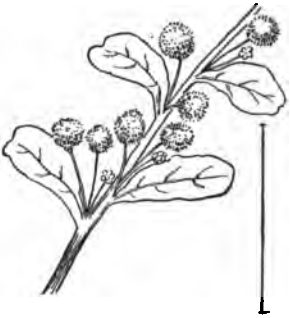


FIG. 175. — Blunt-leaved Acacia.

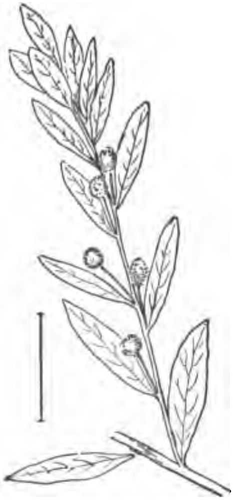


FIG. 176. — Meissner's Acacia.

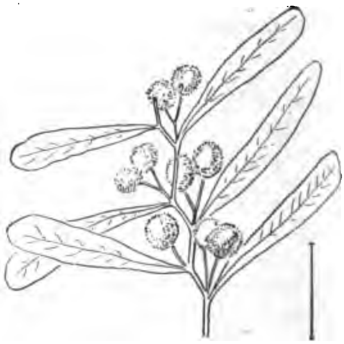


FIG. 177. — Shining Acacia.

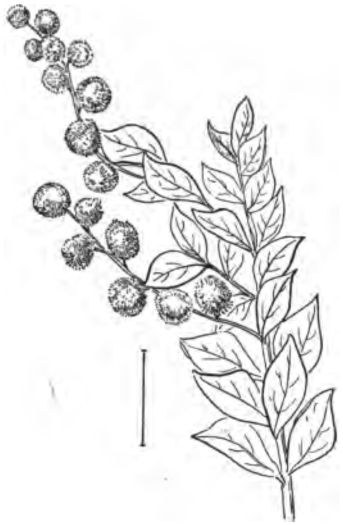


FIG. 178. — Knife-leaved Acacia.

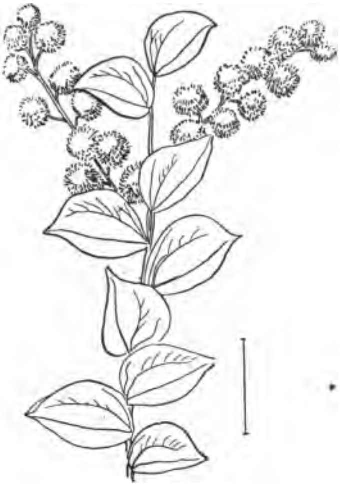


FIG. 179. — Trapezoid-leaved Acacia.

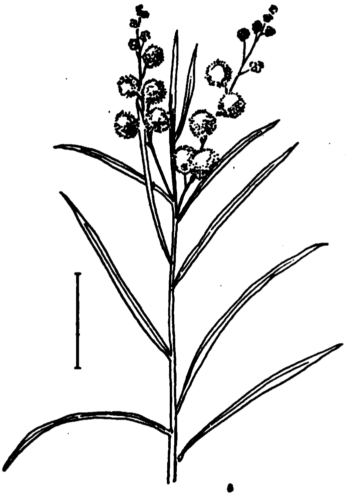


FIG. 180. — Narrow-leaved Acacia.

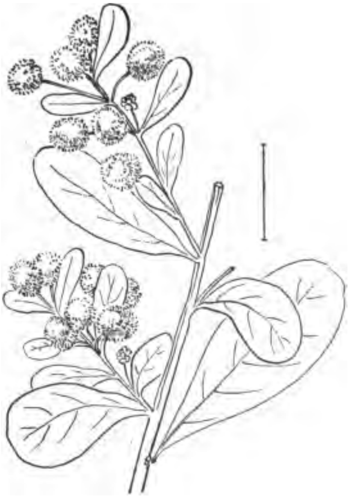


FIG. 181. — Short-bunched Acacia.

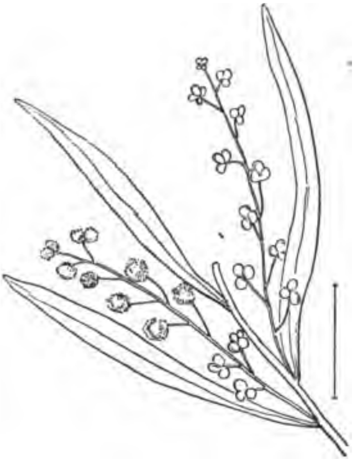


Fig. 182. — Myrtle-leaved Acacia.

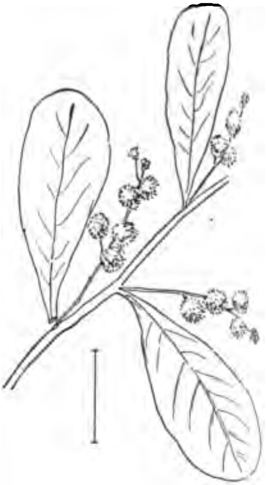


Fig. 183. — Spatulate-leaved Acacia.

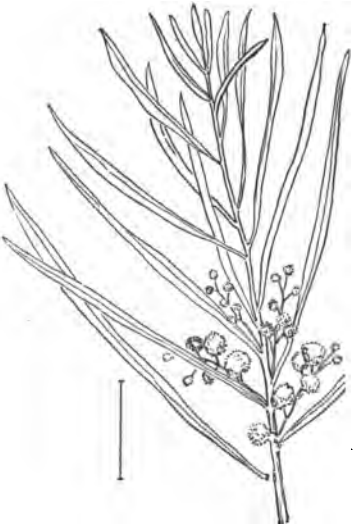


Fig. 184. — Oleander-leaved Acacia.

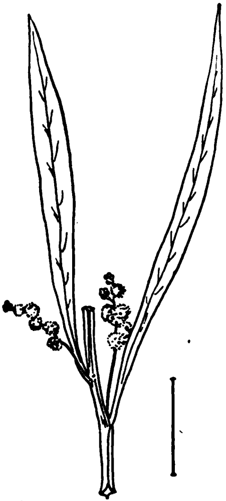


Fig. 185. — Fragrant Acacia.

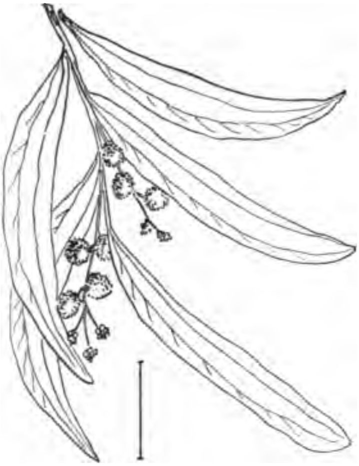


FIG. 186. — Weeping Myall.

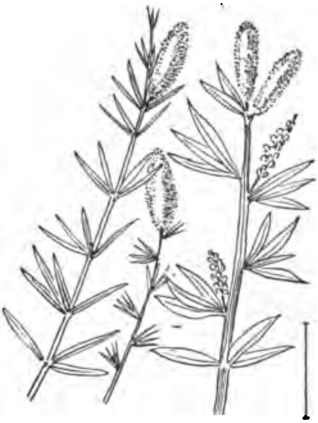


FIG. 187. — Whorl-leaved Acacia.

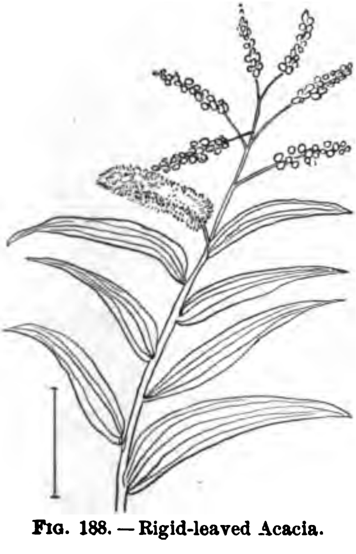


FIG. 188. — Rigid-leaved Acacia.

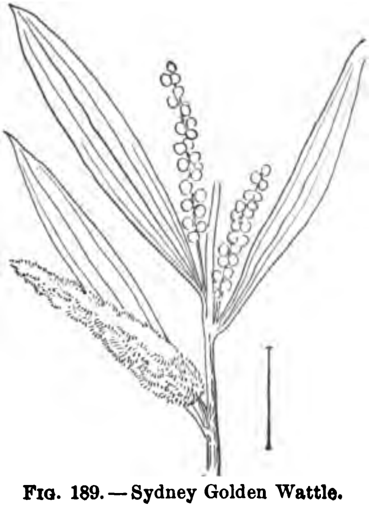


FIG. 189. — Sydney Golden Wattle.

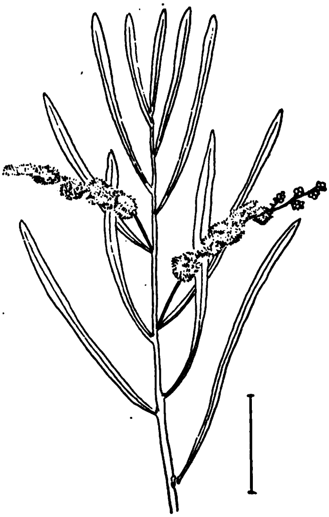


FIG. 190. — Pale-flowered Acacia.

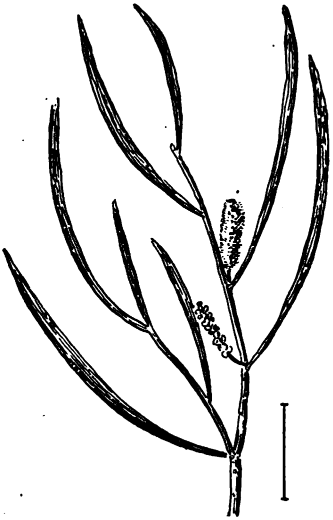


FIG. 191. — Mulga.

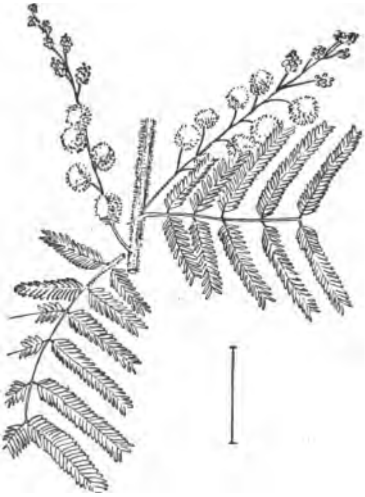


FIG. 192. — Hairy Wattle.

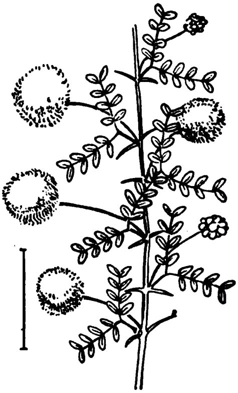


FIG. 193. — Beautiful Acacia.

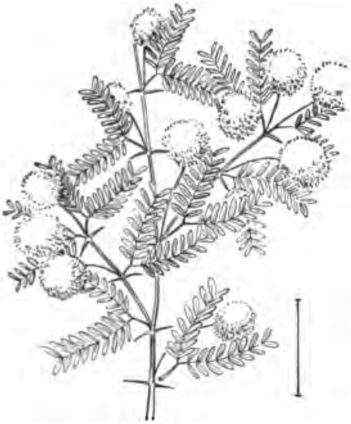


FIG. 194.—Beautiful Acacia (Grandis).

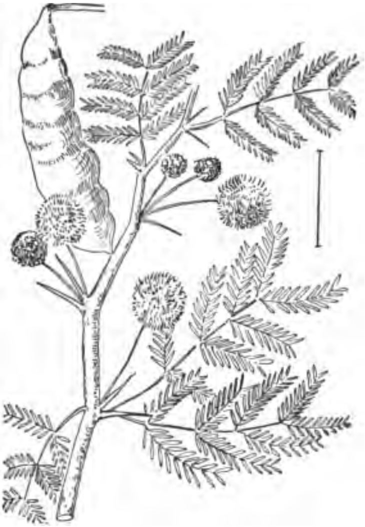


FIG. 195.—Popinac.

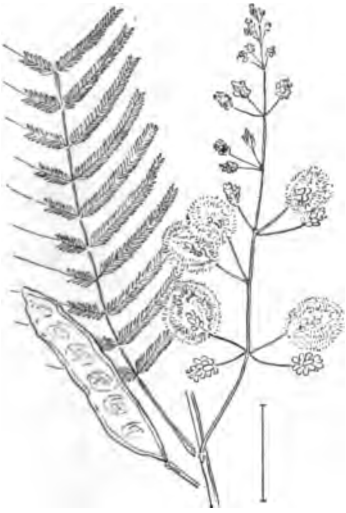


FIG. 196.—Fern-leaved Acacia.

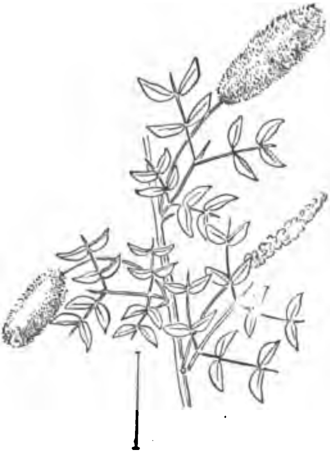


FIG. 197.—Drummond's Acacia.

KEY OF ACACIAS, BASED ON THE FOLIAGE

* Leaves usually simple and alternate (in one species whorled). (**A**).

- **A.** Flowers in globular and nearly solitary axillary heads. (**B.**)
  - **B.** Leaves very slightly flattened and thus nearly cylindric. (**C.**)
    - **C.** Leaves less than 2 inches long and ⅛ inch wide; branches angular. NEEDLE-LEAVED ACACIA (170) — Acacia diffùsa.
    - **C.** Leaves 3–4 inches long with short recurved or oblique point. BROOM WATTLE (171) — Acacia calamifòlia.
    - **C.** Leaves 3–8 inches long, slender and 4-sided; branches angular or winged. LONG-LEAVED ACACIA (172) — Acacia exténsa.
  - **B.** Leaves decidedly flattened and 1- or few-veined, 4 inches or less long. (**D.**)
    - **D.** Stipules forming slender spines; leaves 1 inch long. KANGAROO THORN (173) — Acacia armàta.
    - **D.** Stipules not forming spines, or no stipules. (**E.**)
      - **E.** Leaves ½–1 inch long. (**F.**)
        - **F.** Branches round and hairy; leaves linear with hooked point. SMALL-LEAVED ACACIA (174) — Acacia lineàta.
        - **F.** Branches angular and free from hairs. (**G.**)
          - **G.** Flower-stems about as long as the leaves. BLUNT-LEAVED ACACIA (175) — Acacia acinàcea.
          - **G.** Flower-stem shorter than the leaves. MEISSNER'S ACACIA (176) — Acacia Meissneri.
      - **E.** Leaves often an inch long (to 1½ inches) and blunt. Acacia brachybòtrya argyrophýlla.
      - **E.** Leaves 1½–4 inches long and blunt. SHINING ACACIA (177) — Acacia dodonæifòlia.
- **A.** Flowers usually in numerous globular heads in axillary clusters; leaves 2 inches or less long, 1–few-veined. (**H.**)
  - **H.** Clusters of heads decidedly longer than the leaves; leaves less than 1 inch long. (**I.**)
    - **I.** Leaves obliquely lanceolate with minute point. SMALL-LEAVED ACACIA (174) — Acacia lineàta.
    - **I.** Leaves triangular with thickened edges, ½–¾ inch long. KNIFE-LEAVED ACACIA (178) — Acacia cultrifórmis.
    - **I.** Leaves curved, obovate, less than ½ inch long. TRAPEZOID-LEAVED ACACIA (179) — Acacia pravíssima.
  - **H.** Clusters of heads only about as long as the leaves. (**J.**)
    - **J.** Leaves linear, straight and thin, 1–1½ inches long. NARROW-LEAVED ACACIA (180) — Acacia linifòlia.

J. Leaves obliquely obovate, ½–2 inches long. Short-bunched Acacia (181) — Acacia brachybòtrya.

J. Leaves with gland on edge below the middle, 1–2 inches long. Myrtle-leaved Acacia (182) — Acacia myrtifòlia.

A. Leaves 2–12 inches long, flat and with feather-veining. (**K.**)

K. Leaves 3–8 inches long, curved like a scythe ; branches angular. Scythe-leaved Acacia — Acacia falcàta. Willow-leaved Acacia — Acacia salígna. (The smaller species, 6–10 feet, is Acacia salígna.)

K. Leaves on old growths 12 inches long ; branches drooping. Blue-leaved Wattle — Acacia cyanophýlla.

K. Leaves 1½–3 inches long and almost straight, spatulate. Spatulate-leaved Acacia (183) — Acacia obtusàta.

A. Leaves 2–6 inches long, thick and usually with almost no side-veins. (**L.**)

L. Leaves 3–6 inches long and under ½ inch wide, curved like a scythe. Oleander-leaved Acacia (184) — Acacia neriifòlia.

L. Leaves 3–6 inches long, ¼ inch wide, linear with thick edges. Fragrant Acacia (185) — Açacia suavèolens.

L. Leaves 1½–2 inches long, twisted and finely striate. Oswald's Acacia — Acacia Óswaldi.

L. Leaves 1½–3 inches long, narrow and curved ; branches weeping. Weeping Myall (186) — Acacia péndula.

L. Leaves 1½–3 inches long, rigid and nearly straight. Acacia Cỳclops.

A. Leaves ½–1 inch long with rigid spine-like tips ; flowers in cylindric spikes. (**M.**)

M. Leaves mostly in whorls around the stem ; spikes ½–1 inch long. Whorl-leaved Acacia (187) — Acacia verticillàta.

M. Leaves scattered, stipules often spine-like ; spikes 1 inch or more long. Rigid-leaved Acacia (188) — Acacia oxycèdrus.

A. Leaves 1½–6 inches long and not spiny-tipped ; flowers in cylindric spikes. (**N.**)

N. Leaves 4–6 inches long with distinct side-veins ; spikes usually in pairs. Sydney Golden Wattle (189) — Acacia longifòlia.

N. Leaves 4–6 inches long with 1 distinct nerve or vein ; spike dirty white, 1–2 inches long. Pale-flowered Acacia (190) — Acacia lineàris.

N. Leaves 1½–3 inches long, ⅛ inch wide, rigid ; spikes short and dense. Mulga (191) — Acacia aneùra.

N. Leaves 4–6 inches long ; branches white and silky ; spikes usually in pairs. Silky Acacia — Acacia holoserícea.

* Leaves compound, fern-like, all twice-pinnate. (**O.**)

- **O.** Flowers in globular heads forming racemes; branches very hairy. HAIRY WATTLE (192) — Acacia pubéscens.
- **O.** Flowers in globular heads, solitary; first division of leaves 2, blades small (⅛ inch), 8–20 on each pinna; spiny plant with bright yellow flowers. BEAUTIFUL ACACIA (193) — Acacia pulchélla. Smooth form of this species is var. grándis (194). Very hairy form is var. hispidíssima.
- **O.** Flowers very fragrant, deep yellow, in large heads; first division of leaves 10–16, each with 20–50 very small blades; pods elongated, not flattened. POPINAC or OPOPONAX (195) — Acacia Farnesiàna.
- **O.** Shrub without spines; first division of leaves 4–30 with 20–100 very small hairy blades; pods linear (1–2 inches long), straight and flat. FERN-LEAVED ACACIA (196) — Acacia filicina.
- **O.** Flowers in cylindric drooping pale-yellow spikes 1–1½ inches long; first division of leaves 4–8, each with 4–10 blunt blades. DRUMMOND'S ACACIA (197) — Acacia Drummóndii.

Prùnus. This is a genus which includes the CHERRY, PLUM, PEACH, and APRICOT trees and as far as this book is concerned need not be included because of their height and because the trees are cultivated for their useful fruits rather than for ornament. Of the more shrubby forms some have double flowers, producing no fruits, others have beautiful foliage, and still others have large and abundant single flowers and so are rather ornamental than useful.

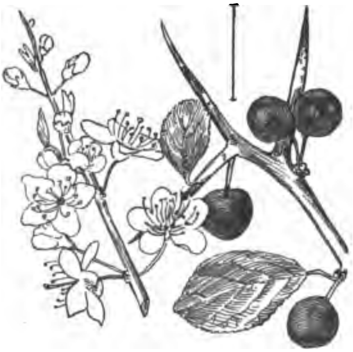


FIG. 198. — Blackthorn.

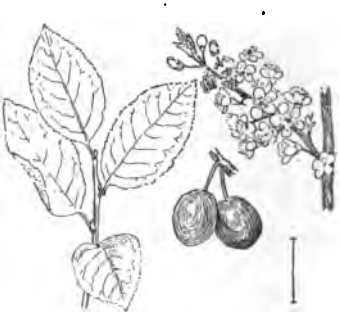


FIG. 199. — Beach Plum.

They all have alternate simple serràte leaves of peculiar taste and odor when bruised. The peach and cherry will give the reader good examples

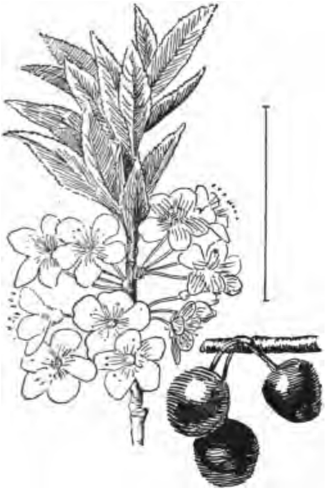


FIG. 200. — Sand Cherry.

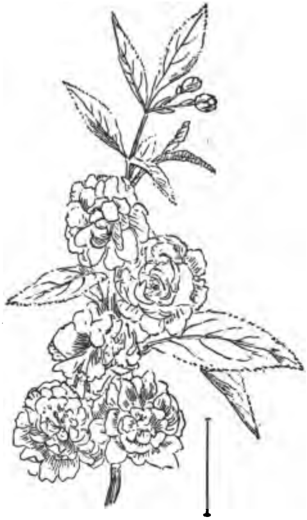


FIG. 201. — Japan Almond.

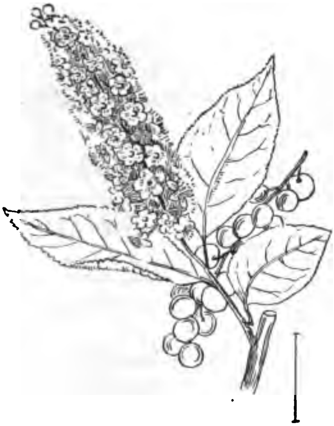


FIG. 202. — Choke Cherry.

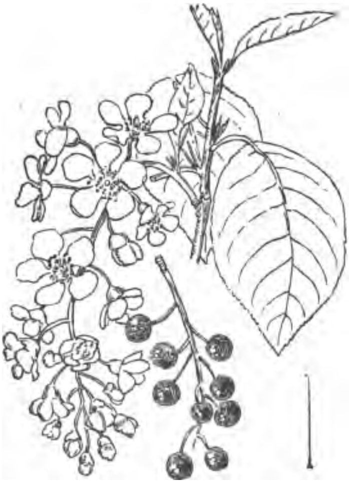


FIG. 203. — European Bird Cherry.

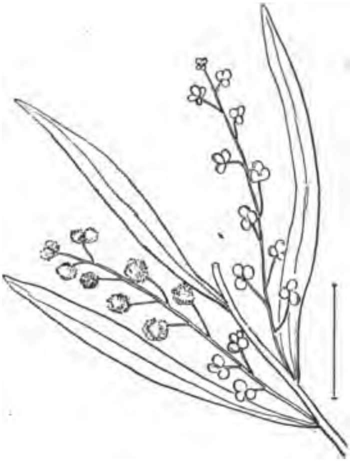


FIG. 182. — Myrtle-leaved Acacia.

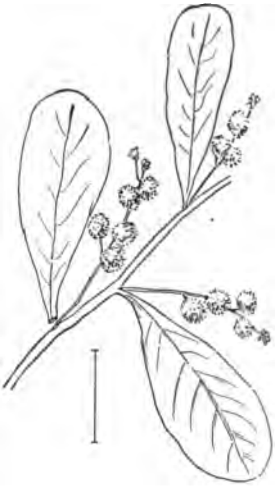


FIG. 183. — Spatulate-leaved Acacia.

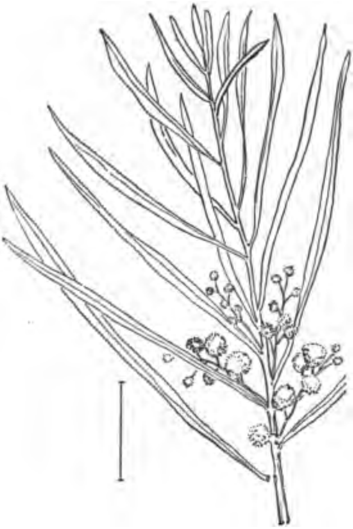


FIG. 184. — Oleander-leaved Acacia.

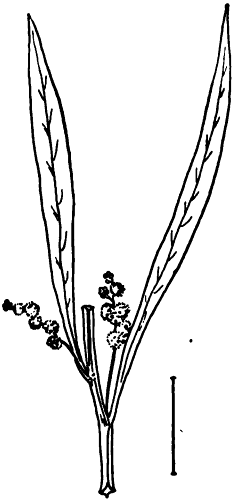


FIG. 185. — Fragrant Acacia.

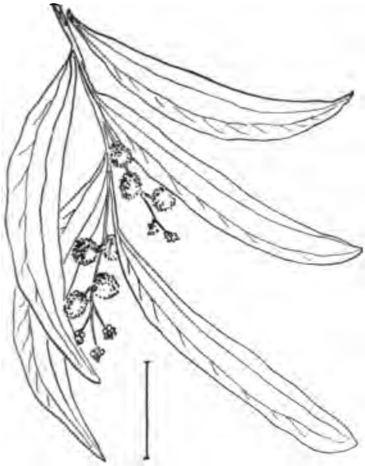


Fig. 186. — Weeping Myall.

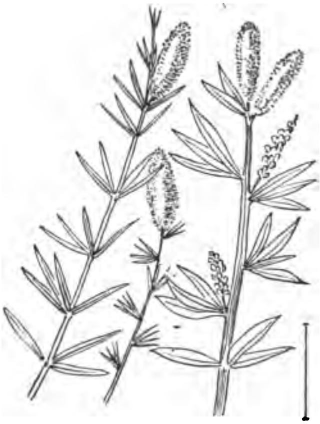


Fig. 187. — Whorl-leaved Acacia.

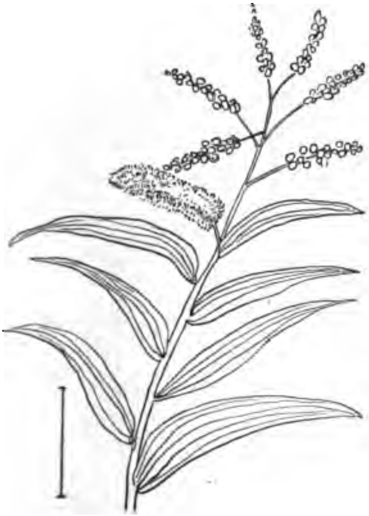


Fig. 188. — Rigid-leaved Acacia.

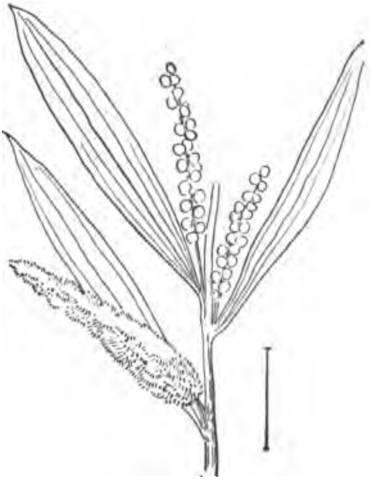


Fig. 189. — Sydney Golden Wattle.

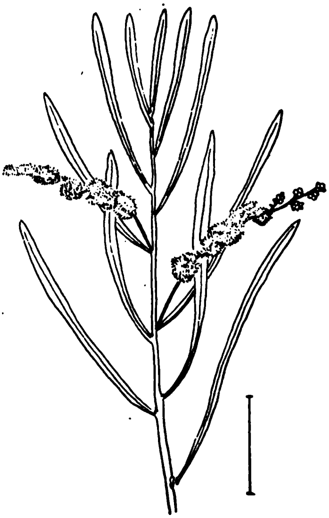


Fig. 190. — Pale-flowered Acacia.

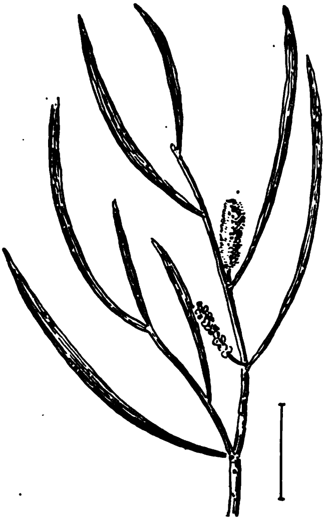


Fig. 191. — Mulga.

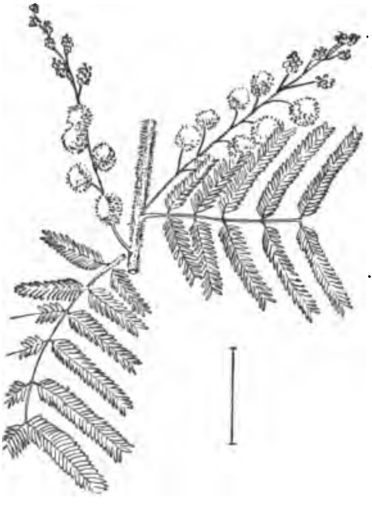


Fig. 192. — Hairy Wattle.

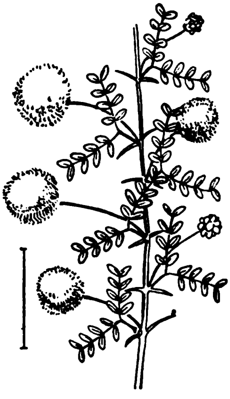


Fig. 193. — Beautiful Acacia.

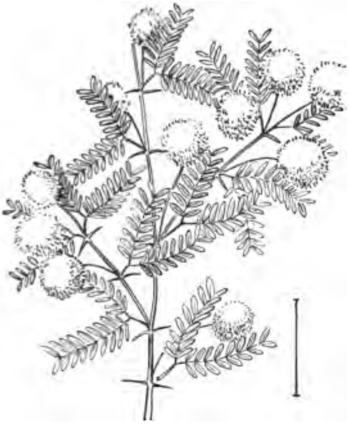


FIG. 194. — Beautiful Acacia (Grandis).

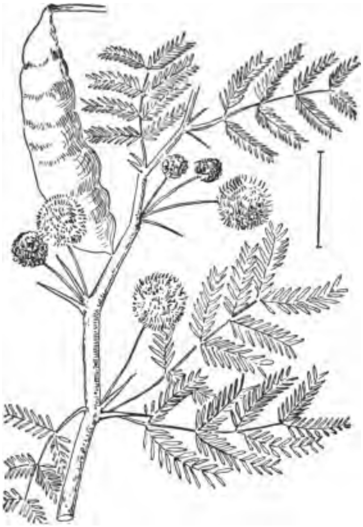


FIG. 195. — Popinac.

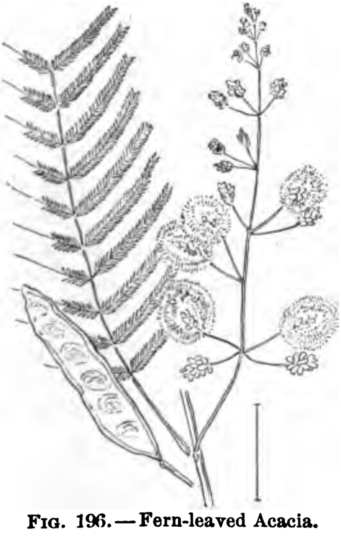


FIG. 196. — Fern-leaved Acacia.

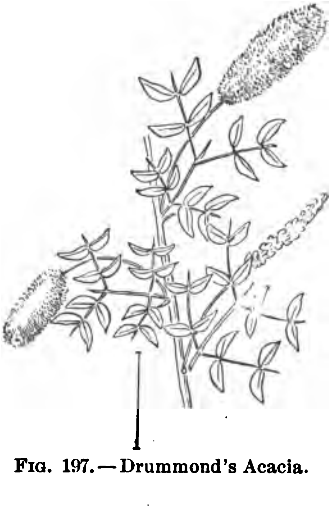


FIG. 197. — Drummond's Acacia.

KEY OF ACACIAS, BASED ON THE FOLIAGE

- *Leaves usually simple and alternate (in one species whorled). (**A**).
  - **A.** Flowers in globular and nearly solitary axillary heads. (**B.**)
    - **B.** Leaves very slightly flattened and thus nearly cylindric. (**C.**)
      - **C.** Leaves less than 2 inches long and ⅛ inch wide; branches angular. NEEDLE-LEAVED ACACIA (170) — Acacia diffùsa.
      - **C.** Leaves 3–4 inches long with short recurved or oblique point. BROOM WATTLE (171) — Acacia calamifòlia.
      - **C.** Leaves 3–8 inches long, slender and 4-sided; branches angular or winged. LONG-LEAVED ACACIA (172) — Acacia exténsa.
    - **B.** Leaves decidedly flattened and 1- or few-veined, 4 inches or less long. (**D.**)
      - **D.** Stipules forming slender spines; leaves 1 inch long. KANGAROO THORN (173) — Acacia armàta.
      - **D.** Stipules not forming spines, or no stipules. (**E.**)
        - **E.** Leaves ½–1 inch long. (**F.**)
          - **F.** Branches round and hairy; leaves linear with hooked point. SMALL-LEAVED ACACIA (174) — Acacia lineàta.
          - **F.** Branches angular and free from hairs. (**G.**)
            - **G.** Flower-stems about as long as the leaves. BLUNT-LEAVED ACACIA (175) — Acacia acinàcea.
            - **G.** Flower-stem shorter than the leaves. MEISSNER'S ACACIA (176) — Acacia Meissneri.
        - **E.** Leaves often an inch long (to 1½ inches) and blunt. Acacia brachybòtrya argyrophýlla.
        - **E.** Leaves 1½–4 inches long and blunt. SHINING ACACIA (177) — Acacia dodonæifòlia.
  - **A.** Flowers usually in numerous globular heads in axillary clusters; leaves 2 inches or less long, 1–few-veined. (**H.**)
    - **H.** Clusters of heads decidedly longer than the leaves; leaves less than 1 inch long. (**I.**)
      - **I.** Leaves obliquely lanceolate with minute point. SMALL-LEAVED ACACIA (174) — Acacia lineàta.
      - **I.** Leaves triangular with thickened edges, ½–¾ inch long. KNIFE-LEAVED ACACIA (178) — Acacia cultrifórmis.
      - **I.** Leaves curved, obovate, less than ½ inch long. TRAPEZOID-LEAVED ACACIA (179) — Acacia pravíssima.
    - **H.** Clusters of heads only about as long as the leaves. (**J.**)
      - **J.** Leaves linear, straight and thin, 1–1½ inches long. NARROW-LEAVED ACACIA (180) — Acacia linifòlia.

J. Leaves obliquely obovate, ½–2 inches long. Short-bunched Acacia (181) — Acacia brachybòtrya.

J. Leaves with gland on edge below the middle, 1–2 inches long. Myrtle-leaved Acacia (182) — Acacia myrtifòlia.

A. Leaves 2–12 inches long, flat and with feather-veining. (**K.**)

K. Leaves 3–8 inches long, curved like a scythe; branches angular. Scythe-leaved Acacia — Acacia falcàta. Willow-leaved Acacia — Acacia salígna. (The smaller species, 6–10 feet, is Acacia salígna.)

K. Leaves on old growths 12 inches long; branches drooping. Blue-leaved Wattle — Acacia cyanophỳlla.

K. Leaves 1½–3 inches long and almost straight, spatulate. Spatulate-leaved Acacia (183) — Acacia obtusàta.

A. Leaves 2–6 inches long, thick and usually with almost no side-veins. (**L.**)

L. Leaves 3–6 inches long and under ½ inch wide, curved like a scythe. Oleander-leaved Acacia (184) — Acacia neriifòlia.

L. Leaves 3–6 inches long, ¼ inch wide, linear with thick edges. Fragrant Acacia (185) — Açacia suavèolens.

L. Leaves 1½–2 inches long, twisted and finely striate. Oswald's Acacia — Acacia Óswaldi.

L. Leaves 1½–3 inches long, narrow and curved; branches weeping. Weeping Myall (186) — Acacia péndula.

L. Leaves 1½–3 inches long, rigid and nearly straight. Acacia Cỳclops.

A. Leaves ½–1 inch long with rigid spine-like tips; flowers in cylindric spikes. (**M.**)

M. Leaves mostly in whorls around the stem; spikes ½–1 inch long. Whorl-leaved Acacia (187) — Acacia verticillàta.

M. Leaves scattered, stipules often spine-like; spikes 1 inch or more long. Rigid-leaved Acacia (188) — Acacia oxycèdrus.

A. Leaves 1½–6 inches long and not spiny-tipped; flowers in cylindric spikes. (**N.**)

N. Leaves 4–6 inches long with distinct side-veins; spikes usually in pairs. Sydney Golden Wattle (189) — Acacia longifòlia.

N. Leaves 4–6 inches long with 1 distinct nerve or vein; spikes dirty white, 1–2 inches long. Pale-flowered Acacia (190) — Acacia lineàris.

N. Leaves 1½–3 inches long, ⅛ inch wide, rigid; spikes short and dense. Mulga (191) — Acacia aneùra.

N. Leaves 4–6 inches long; branches white and silky; spikes usually in pairs. Silky Acacia — Acacia holoserícea.

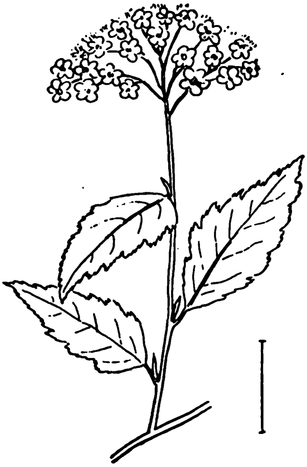


FIG. 220. — Long-budded Spirea.

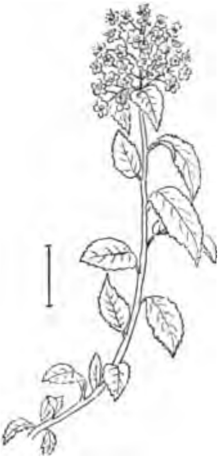


FIG. 221. — Beautiful Spirea.

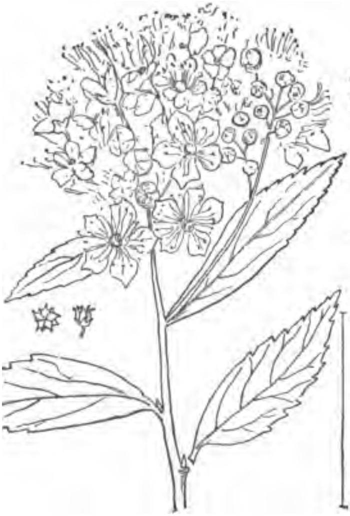


FIG. 222. — Fortune's Spirea.

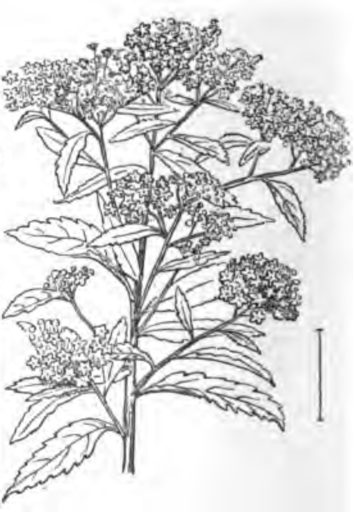


FIG. 223. — White-flowered Spirea.

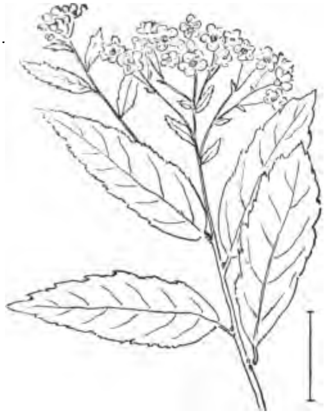


FIG. 224. — Bumald's Spirea.

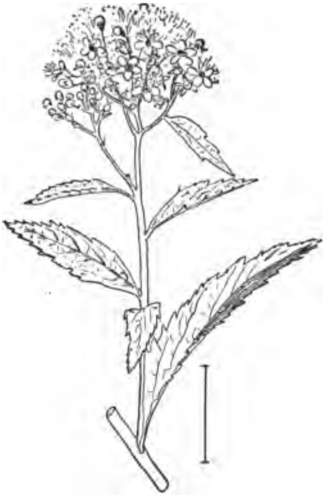


FIG. 225. — Anthony Waterer's Spirea.

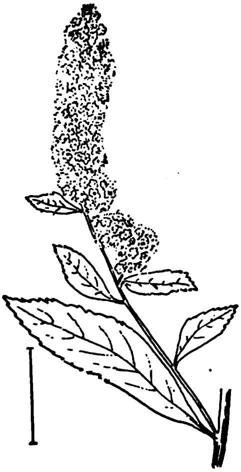


FIG. 226. — Corymbed Spirea.

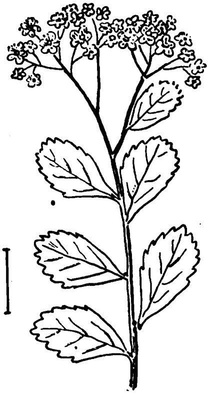


FIG. 227. — Birch-leaved Spirea.

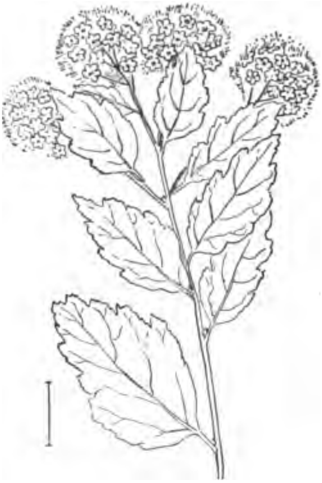


FIG 228. — Western Corymbed Spirea.

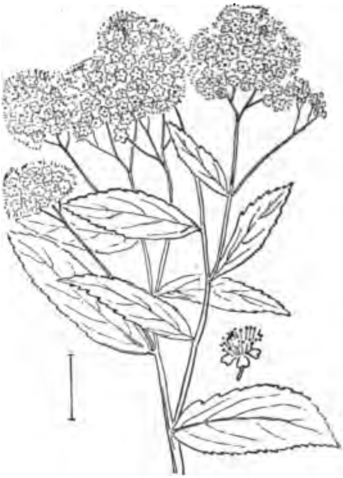


FIG. 229. — Noble's Spirea.

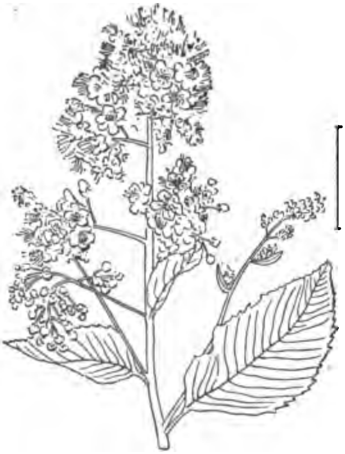


FIG. 230. — Willow-leaved Spirea.

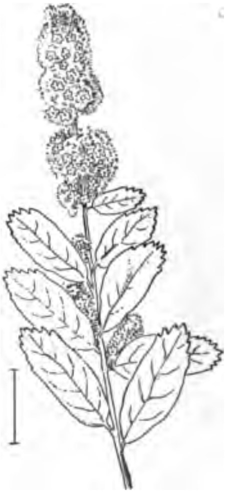


FIG. 231. — Menzies' Spirea.

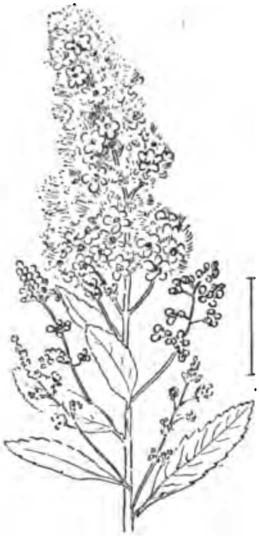


FIG. 232. — Billard's Spirea.

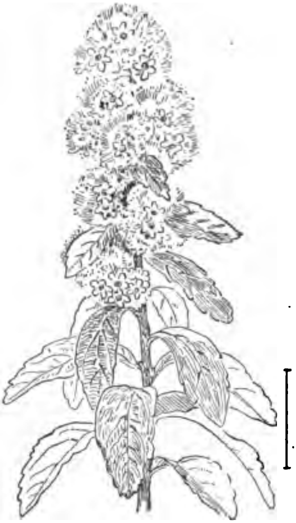


FIG. 233. — Douglas' Spirea.

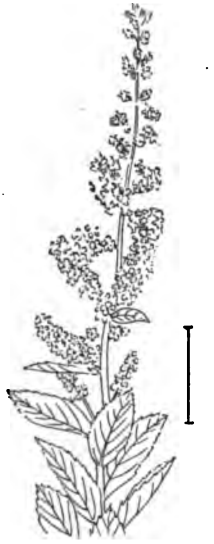


FIG. 234. — Steeple Bush.

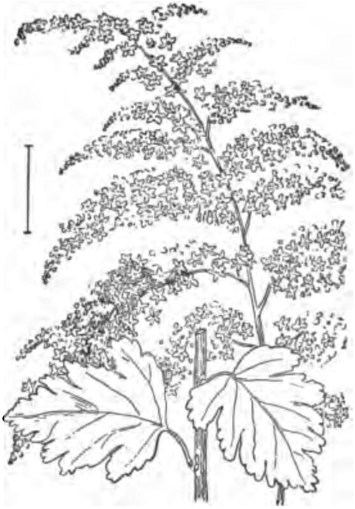


FIG. 235. — White Beam-leaved Spirea.

KEY TO THE SPIREAS

But not including several so-called Spireas, the one with large 3-lobed leaves and inflated pods, Physocárpus, p. 158; or any with compound leaves, Sorbària, p. 159, Astílbe, p. 160, or Arúncus, p. 161.

* With white flowers in sessile umbels along the stems in April and May, before the leaves expand, earliest blooming. (**A.**)

A. A slender shrub (to 6 feet) with the flowers usually fully double (var. flòre plèno) and about ⅓ inch in diameter; the leaves when they expand are dark green, oblong, denticulate, and hairy beneath, 1–2 inches long. PLUM-LEAVED SPIREA (206) — Spiræa prunifòlia.

A. A spreading shrub with arching branches; flowers in 3–5-flowered clusters, the 5 petals much longer than the short stamens; the leaves are small, 1–1½ inches, slender, willow-like. A graceful shrub very useful for seaside planting. SNOW GARLAND or THUNBERG'S SPIREA (207) — Spiræa Thunbergii.

A. Similar to the last but taller and more free-flowering with broader and less willow-like leaves; better for spring blooming but not so fine in its summer condition. HYBRID SNOW GARLAND (208) — Spiræa argùta.

A. A spreading shrub with erect or arching branches (to 5 feet) and nearly round petals somewhat longer than the stamens; the leaves are usually 3-ribbed from the base and widest toward the tip (¾–1½ inches long). A variable species with a dozen varietal names; the wedge-shaped leaves and rounded petals are constant characteristics of about all of the forms. HYPERICUM-LEAVED SPIREA (209) — Spiræa hypericifòlia.

* White flowers in umbel-like clusters on short leafy side-shoots. Blooming at the time of leaf expansion, May, June. (**B.**)

B. Margin of leaves entire at base and but slightly if at all notched near the tip. Stamens never longer than the petals (except in S. crenàta). (**C.**)

C. Leaves small (⅓–1 inch long), grayish with hairs on both sides. A dense bushy shrub to 3 feet. Flowers ¼ inch broad in dense head-like clusters. HOARY-LEAVED SPIREA — Spiræa càna.

C. Leaves ¼–1 inch long, feather-veined, entire-edged and smooth on both sides; branches reddish brown and angular; seed-pods curving outward; 4 feet high with arching branches. ALPINE SPIREA (210) — Spiræa alpìna.

C. Leaves ½–1¼ inches long and 3-ribbed from base, grayish green below; 3 feet high with slender striped branches; seed-pods erect; stamens longer than the round petals. Crenate Spirea (211) — Spiræa crenàta.

C. Leaves ¾–1¾ inches long and almost as broad as long, smooth dark green above and bluish green below, thick and almost evergreen; tall, to 8 feet with spreading branches. Round-leaved Spirea (212) — Spiræa bracteàta.

B. Margin of leaves decidedly notched and surface smooth on both sides; stamens not longer than the petals. (**D.**)

D. Leaves ¾–1¾ inches long, broad ovate and feather-veined; hardy only South; petals about as long as stamens. Blume's Spirea — Spiræa Blùmei.

D. Leaves ½–1½ inches long, 3–5-ribbed from base and often 3-lobed at tip; shrub to 4 feet with spreading branches; common. Three-lobed Spirea (213) — Spiræa trilobàta.

D. Leaves ¾–1¾ inches long; petals twice the length of the stamens; to 6 feet with arching branches; common. Van Houtte's Spirea (214) — Spiræa Van Hoùttei.

D. Leaves decidedly more elongated, 1–2½ inches long, dark green above and bluish green below; handsome and common South but not fully hardy North, growing to the height of 4 feet with arching branches; flowers larger in dense clusters, often double (var. flòre plèno). Lance-leaved Spirea (215) — Spiræa cantoniénsis (S. lanceolàta, S. Reevesiàna).

B. Margin of leaves decidedly notched and surface pubescent, especially below; stamens not longer than the petals. (**E.**)

E. Flowers and seed-pods also pubescent; hardy only South. (**F.**)

F. Lower side of leaves covered with grayish hairs. Spiræa blánda.

F. Lower side of leaves covered with yellowish hairs. Chinese Spirea — Spiræa chinénsis.

E. Flowers and seed-pods smooth; shrub to 6 feet with slender arching branches; hardy and frequent North. Downy-leaved Spirea (216) — Spiræa pubéscens.

B. Margin of leaves serrate or doubly serrate; stamens longer than the petals; calyx reflexed. (**G.**)

G. Upright shrub to five feet with round and usually smooth branches; leaves slightly notched near tip, 1–2½ inches long. Intermediate Spirea (217) — Spiræa mèdia.

G. Shrub to 6 feet with smooth but angular branches; leaves decidedly notched, 2–3 inches long. Germander-leaved Spirea (218) — Spiræa chamædryfòlia.

* White or pink flowers in broad and flat compound clusters at the tips of the branches, blooming in June and later, some as late as August. (**H.**)

H. Stamens about as long as the white petals; leaves small, an inch or less long. (**I.**)

I. A tall (5–12 feet), graceful, handsome shrub with dense and nearly globular clusters (2 inches broad) of small flowers; not hardy North. Sold under many names. WEDGE-LEAVED SPIREA (219) — Spiræa canéscens.

I. A dwarf procumbent shrub (6 inches high) blooming in July with leaves ½–1 inch long. DECUMBENT SPIREA — Spiræa decúmbens.

H. Stamens longer than the petals. Free-flowering with many clusters. (**J.**)

J. A shrub to 4 feet with smooth round branches, sharp-pointed elongated buds and doubly notched leaves with gland-tipped notches. Flowers white, in June. LONG-BUDDED SPIREA (220) — Spiræa longigémmis.

J. To 3 feet with angular, spreading branches; small pink flowers in small (½–2 inches) clusters, June, July; not hardy North. BEAUTIFUL SPIREA (221) — Spiræa bélla.

J. Upright to 6 feet with round branches (hairy when young); flowers white or pale pink in clusters 1–4 inches broad, in August. BROAD-CLUSTERED SPIREA — Spiræa expánsa.

J. Upright usually smooth shrub to 4 feet with round branches and small pink flowers in rather loose clusters, the ripe pods spreading. Hardy and frequent in cultivation (called callòsa) with many named varieties. FORTUNE'S SPIREA (222) — Spiræa japónica (S. callòsa, S. Fórtunei).

J. Handsome, to 5 feet, free-flowering with large bright pink flowers in broad clusters (July, Aug.); pale green leaves (2–3 inches long). The ripe pods do not spread. PINK HYBRID SPIREA — Spiræa Margarìtæ.

J. Similar plant with paler flowers (sometimes almost white), June, July. The ripe pods somewhat spreading. FOX'S SPIREA — Spiræa Fóxii.

J. Small, rarely 2 feet high, of garden origin; July to Sept. BUMALD'S SPIREA (224) — Spiræa Bumálda, — with whitish or dark pink flowers; ANTHONY WATERER'S SPIREA (225) — S. Bumálda Ánthony Wáterer; and S. Bumalda Lemoìnei with bright crimson flowers, leaves of the latter more puckered or rougher. WHITE-FLOWERED SPIREA (223) — Spiræa albiflòra — with stiff upright branches.

H. Stamens longer than the petals (as with the last section) but less free-flowering, usually with only terminal clusters. Low shrubs rarely 3 feet high. Pods not spreading. (**K.**)

K. Shrub with purplish brown whip-like branches; small white flowers in rounded clusters (1½–3 inches broad) in May and June; leaves coarsely, often doubly, serrate, bluish-green below, 1½–3 inches long. CORYMBED SPIREA (226) — Spiræa corymbòsa.

K. Later-blooming (June to Aug.) but similar shrubs. BIRCH-LEAVED SPIREA (227) — Spiræa betulifòlia and the following:

L. Branches yellowish brown with more deeply cut leaves; flowers white. WESTERN CORYMBED SPIREA (228) — Spiræa lùcida. VIRGINIA SPIREA — S. virginiàna.

L. Branches striped dark brown; rather large white or pale pink flowers with round petals. Spiræa supérba.

L. Flowers bright pink in dense clusters 1–2 inches broad. DENSE-FLOWERED SPIREA — Spiræa densiflòra.

* Extensively cultivated hybrid Spireas with rounded and very compound clusters (about as broad as high). Only the commonest are given; new ones of garden origin are constantly being introduced. (**M.**)

M. Tall-growing (6 feet) with slender upright branches and numerous rather small lateral clusters (1½–3 inches) of white or pink flowers, June, July. Leaves 1–2 inches long, pale bluish green below, rounded at both ends, crenately notched beyond the middle. Not fully hardy North. FONTENAY'S SPIREA — Spiræa Fontenàysii.

M. Smaller shrubs (3–4 feet) with larger terminal clusters on upright branches. (**N.**)

N. Upright shrub with dark brown branches and oblong smooth leaves (1½–2½ inches long) acute at both ends and fully serrate. Flowers pinkish white in broad finely pubescent clusters, July–Sept. Spiræa conspícua.

N. Upright shrub with striped and finely hairy branches; leaves 2–3½ inches long, elongated and pointed at both ends, fully serrate, grayish-hairy beneath. Flowers pink in broad corymb-like panicles, July, Aug. Spiræa sanssouciàna.

N. Similar to the last but the leaves usually rounded at base and the flowers a lighter pink, June, July. NOBLE'S SPIREA (229) — Spiræa Nobleàna. (Similar to this, with larger leaves and paler flowers, PLUMY MEADOW-SWEET — Spiræa pachýstachys.)

* QUEEN OF THE MEADOW and MEADOW-SWEET SPIREAS (including Schizonòtus, 3d **O**) with elongated and very compound clusters of small white or pink flowers. (**O.**)

O. Leaves smooth or nearly so and sharply notched except at base, but not lobed; blooming June–Aug. (**P.**)

P. Upright to 6 feet with reddish-brown branches and white flowers in leafy pyramid-shaped clusters; stamens about as long as the petals and white; pods smooth. MEADOW-SWEET — Spiræa álba.

P. With larger and somewhat blushed petals and pink stamens longer than the petals. QUEEN OF THE MEADOW — Spiræa latifòlia.

P. With pink and white flowers and stamens twice the length of the petals; pods hairy where they join. WILLOW-LEAVED SPIREA (230) or MEADOW-SWEET — Spiræa salicifólia.

P. With bright pink flowers in narrow clusters 5–8 inches long, stamens more than twice the length of the nearly round petals; leaves coarsely toothed. MENZIES' SPIREA (231) — Spiræa Ménziesi.

O. Leaves usually with whitish or brownish hairs beneath; flowers bright pink, July–Sept.; shrubs to 6 or 8 feet with brown hairy branches. (**Q.**)

Q. Leaves narrow and acute at both ends. BILLARD'S SPIREA (232) — Spiræa Billárdii.

Q. Leaves broader and rounded at ends. DOUGLAS' SPIREA (233) — Spiræa Doùglasi.

Q. Leaves with brownish hairs beneath. HARDHACK or STEEPLE BUSH (234) — Spiræa tomentòsa.

Of this last there is a white-flowered variety (álba).

O. Leaves broad and decidedly lobed, more or less hairy below; flowers creamy-white, small in very large panicles. A peculiar plant which has been called by several different names. Shrub to 20 feet. Hardy with protection to Massachusetts. Very variable. July. WHITE BEAM-LEAVED SPIREA (235) — Schizonòtus díscolor.

Physocárpus. NINEBARK (236) — Physocarpus opulifòlius — is an excellent shrub, usually considered a Spiræa, 6 to 8 feet high with beautiful foliage, flowers and fruit. It takes its name from the layers of gray bark which readily peel off from the stems. It has simple alternate somewhat lobed leaves; white spirea-like flowers (in June) and five slightly united bladdery pods which turn purple in late summer and till fall. There is a variety with golden foliage in the spring, bronzy later in the season, Golden Ninebark (237) — lùtea or aùrea. A dwarf form with darker, smaller and fewer-lobed leaves is nàna.

This is an eastern American species and probably the common one in cul-

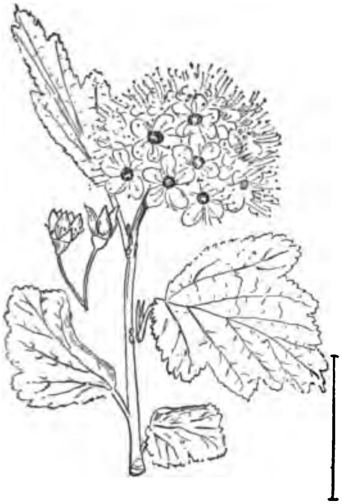


Fig. 236. — Ninebark.

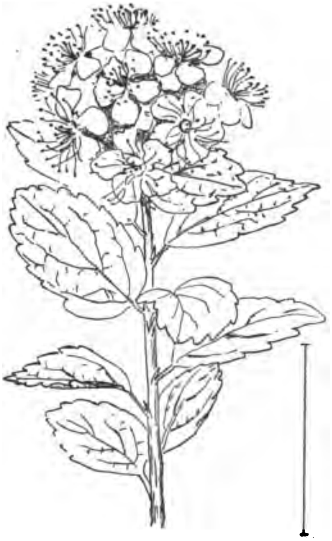


Fig. 237. — Golden Ninebark.

tivation, but there is a taller and more vigorous species from eastern Asia, **Eastern Ninebark** — Physocarpus amurénsis, — which can be known by its smaller and more hairy pods only one third longer than the calyx lobes; the leaves, also, are more decidedly lobed and more sharply notched.

[Twig cuttings; seeds.]

Sorbària. The Ash-leaved Spireas are beautiful hardy shrubs with pinnate or bipinnate leaves and spirea-like white flowers in showy terminal panicles. Except the last species they all prefer rich and rather moist soil. They put out their foliage early in the season.

[Twig cuttings; root cuttings; suckers; seeds.]

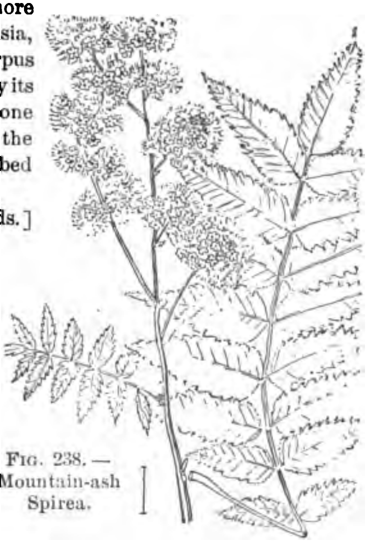


Fig. 238. — Mountain-ash Spirea.

KEY TO THE SORBARIAS

- * Leaves odd-pinnate with doubly serrate blades; blooming June to Sept. (**A.**)
  - **A.** Flower-cluster 5–12 inches long, June, July; shrub 3–5 feet high; blades 13–23. MOUNTAIN-ASH SPIREA (238) — Sorbària sorbifòlia.
  - **A.** Flower-cluster 3–5 inches long with larger flowers (½ inch broad), June, July; 1–3 feet high; blades 13–17. LARGE-FLOWERED SORBARIA — Sorbaria grandiflòra.
  - **A.** Flower-cluster 8–12 inches long and 8 inches broad, flowers only ¼ inch wide, July, Aug.; shrub to 8 feet; blades 15–21; twigs green. LINDLEY'S SORBARIA — Sorbaria Lindleyàna.
  - **A.** Flower-cluster 12 inches long and broad, flowers large (⅓–½ inch), July to Sept.; shrub to 8 feet, very beautiful and hardy; blades not so deeply or doubly cut as the other species. AITCHISON'S SORBARIA — Sorbaria Aitchisoni.
- * Leaves very fern-like, bipinnate, only 1–3 inches long with minute blades. Flower-clusters 2–5 inches long with flowers ½ inch broad. This is an American species found in California to Wyoming, but rare in cultivation East, though hardy to Massachusetts. MILFOIL-LEAVED SORBARIA — Sorbaria millefòlium.

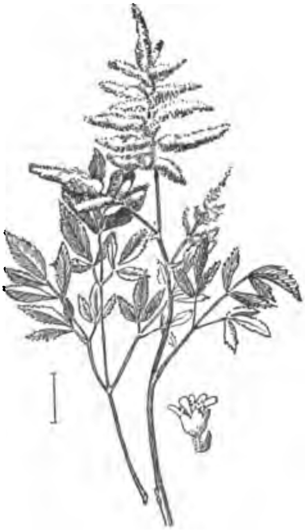


FIG. 239. — Japan Astilbe.

Astìlbe. JAPAN ASTILBE (239) — Astilbe japónica — is a beautiful tall hardy herb often grown as a border plant among Spireas and so like them that it is frequently called Spiræa japónica in the nursery catalogues. For this reason, although an herb, it is included. It has alternate several-times-compound leaves with 3 to 30 notched narrow blades. The small white flowers are in large terminal clusters, panicles, in May and June. It is generally cultivated for its forced feathery flowers, in winter. As a window plant it needs abundant water when in bloom. Another plant similar to this in appearance of both flowers and foliage and often confused with it is

Astilbe-like Aruncus (240) —Arúncus astilboìdes. Both of these plants, though placed by botanists in separate families, are popularly and in catalogues called Spireas. The Aruncus is closely related to the true Spireas in the rose family, while the Astilbe is placed in the Saxifrage family. The figures given will enable the reader to separate these two herbs from each other as well as to separate both from the true Spireas. The Aruncus is a diœcious plant, *i.e.* the stamens are in the flowers of one plant and the pistils are on a separate plant. There are many stamens in the staminate plant of Aruncus; the Astilbe flowers always have both stamens and pistils, and the stamens are only ten in number.

[Both Astilbe and Aruncus are best propagated by divisions.]

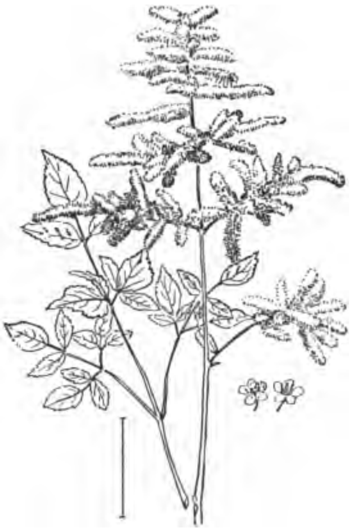


Fig. 240. — Astilbe-like Aruncus.

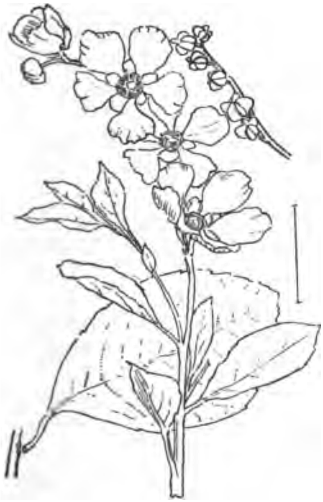


Fig. 241. — Pearl Bush.

Exochórda. The Pearl Bushes are cultivated for their large pure white flowers in clusters in April and May. The peculiar fruit, which remains on the bush through the winter, is the most characteristic feature by which to know the plant at all seasons. There are five bony smooth united divisions which, surrounding a central axis, from the top view, look very star-like. The flowers are large, 2 inches, in terminal clusters about the time the leaves expand and completely cover the bush. The alternate simple leaves vary from entire-edged on old plants to strongly toothed on vigorous young growths.

There are several species from Asia, though probably the first, below, is the only one in general cultivation as yet. This is called PEARL BUSH (241) — Exochorda grandiflòra — and grows in the North to a height of 8 feet, in the South to 15 feet or more. The leaves are simple, alternate, and whitish below, more or less toothed. A straggling bush very beautiful in flower but needing pruning or hiding of the lower portion by other plants to make it sightly through the season. The pruning may make a tree-like growth of it.

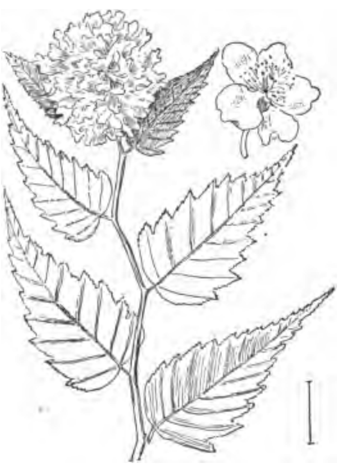


FIG. 242. — Kerria.

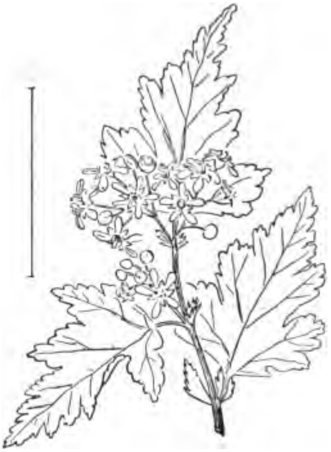


FIG. 243. — Stephanandra.

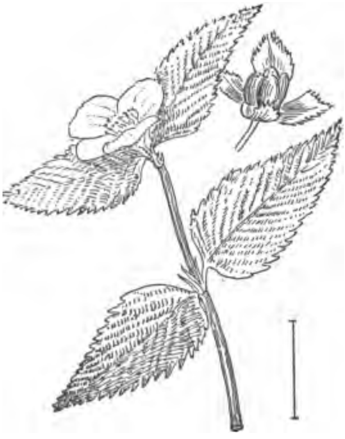


FIG. 244. — Rhodotypos.

Exochorda Álberti is a more vigorous species with darker foliage and larger and more numerous flowers in the clusters.

[Seeds; twig cuttings; layers.]

Kérria japónica. KERRIA (242) or JAPANESE 'ROSE,' OR GLOBE FLOWER (incorrectly called Corchorus), is an old-fashioned shrub often cultivated, with green erect, slender, whip-like, pithy stems 5 to 8 feet high, and yellow usually double flowers an inch or more broad. In the rare single-flowered form there are five petals and many stamens. The leaves are alternate, thin, doubly serrate and plaited, the veining is feathered and straight, the tips are long and slender. The flowers are abundant in June and appear irregularly through the rest of the year. There is a variety with white variegated foliage, growing only 2 to 8 feet high, argénteo-variegàta, and another dwarf form with the twigs striped yellow and green, aùreo-vittàtis.

[Twig cuttings; layers; divisions.]

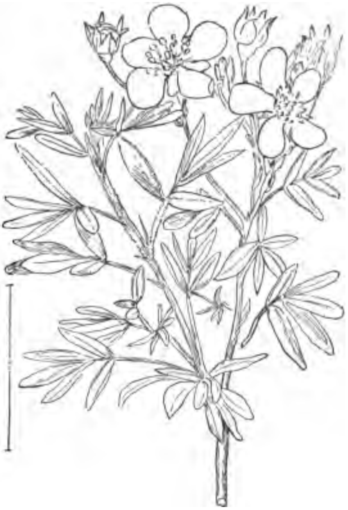


Fig. 245. — Shrubby Potentilla.

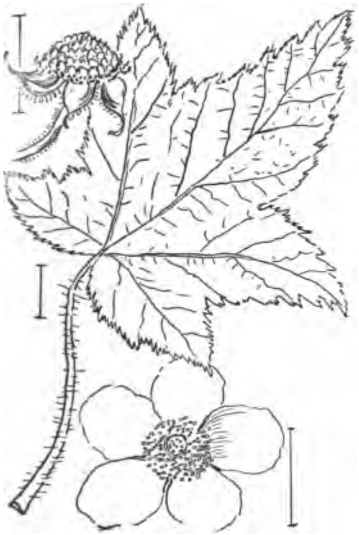


Fig. 246. — Purple-flowering Raspberry.

Stephanándra flexuòsa. Stephanandra (243) is a beautiful smooth shrub (5 feet) with angular zigzag branches and deciduous triangular deeply-notched and lobed leaves of a peculiar grayish green color (¾–1½ inches long). The white flowers are small and inconspicuous (June) in terminal clusters. The small pods contain 1 or 2 shining seeds. The plant is cultivated for its peculiar foliage, which turns a bronze-red in late summer. Hardy north to Massachusetts if somewhat protected.

[Twig cuttings; seeds.]

Rhodotýpos kerrioìdes. White Kerria or Rhodotypos (244) is another hardy Japanese shrub with plaited leaves similar to the last but arranged opposite on the stem. The almost pure white single-rose-like 4-petaled flowers, near the ends of the branches, bloom from May until frost. The fruit, remaining on through the winter, seems like four black beads surrounded by the large persistent calyx. The flowers are 1½ inches broad, abundant in May and June and appearing irregularly through the rest of the summer. It is a much-branching shrub 3 to 6 feet high, rendered very ornamental by the foliage as well as the flowers and fruit. [Seeds; twig cuttings.]

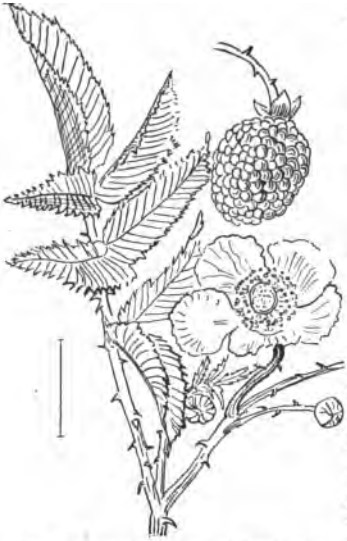


Fig. 247. — Strawberry-Raspberry.

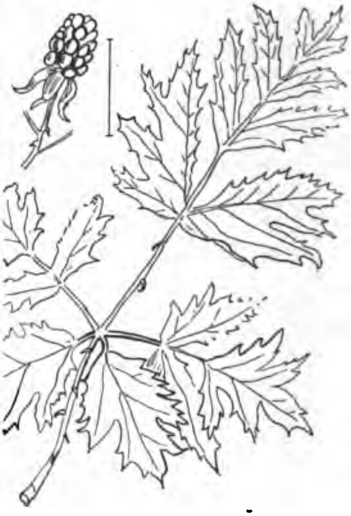


Fig. 248. — Cut-leaved Blackberry.

Potentilla. The Cinquefoils are a large group of generally yellow-flowered herbs, but one species frequent in cultivation is a valuable shrub 1 to 4 feet high with peculiar shreddy bark and compound 3- to 7-bladed leaves. The blades are linear, pointed, ½–1 inch long with silky surface and rolled edges. The flowers are bright yellow, showy, an inch or more broad with five petals and many stamens, blooming through the summer. The fruit appears like many dry seeds, achenes, in the hairy calyx. Shrubby Potentilla or Cinquefoil (245) — Potentilla fruticòsa. [Seeds; divisions.]

Rùbus. The Raspberries, Dewberries, and Blackberries are a large and varied group (1000 species) of useful fruits of the north temperate zone. Some trail over the ground, others grow to the height of 5 to 8 feet; nearly all are prickly and so are called Brambles. Only the few species cultivated for their beauty need description here.

PURPLE-FLOWERING RASPBERRY (246) — Rubus odoràtus — is of bushy growth (3 to 5 feet high) with bristly stems, very large 3- to 5-lobed maple-like alternate leaves and large, 1 to 2 inches broad, rose-purple flowers in rather large clusters. The fruit, as indicated by its name, is raspberry-like but broad and flat, light red and not very edible. It blooms and fruits all summer. If it were not for its spreading tendency and rank growth, overtopping other shrubs, it would be a very valuable bush for cultivation. It grows well in semishade, so should have a place in large grounds. The western species, WHITE-FLOWERING RASPBERRY — Rubus parviflòrus, — is similar but with white flowers, few in a cluster.

STRAWBERRY-RASPBERRY (247) — Rubus rosæfòlius — is an erect tall-growing shrub — 2 to 4 feet high north, but evergreen and much taller South, with compound pinnate leaves having 5 to 15 strongly veined sharply serrate narrow blades. The showy white flowers are large, 1½–2 inches broad, either solitary or in few-flowered clusters. This is a beautiful plant and worthy of more general culture than it receives. The fruit is large, 1 to 1½ inches long, raspberry-like, bright red, but not very edible. The double form, 'BRIDAL ROSE'— coronàrius (R. grandiflòrus), — is also cultivated.

WINEBERRY — Rubus phœnicolàsius — has the stems densely covered with brownish red glandular hairs and the leaves compound of 3 to 5 blades, the end one often irregularly lobed. An interesting but not very beautiful shrub which kills to the ground in the North. It propagates by its rooting tips.

CUT-LEAVED or EVERGREEN BLACKBERRY (248) — Rubus laciniàtus — is in the South a tall straggling bush with large canes as thick as the wrist and nearly evergreen leaves of many much-cut blades. In the North it does not grow tall, but has a more spreading habit, and its leaves are not evergreen. It blooms and ripens its black thimble-shaped fruit from late summer to October. The above and a few other species are given in the following [Divisions.]

KEY TO ORNAMENTAL BLACKBERRIES AND RASPBERRIES

* Leaves simple, 3–5-lobed; fruit raspberry- or cap-shaped. (**A.**)

A. Flowers very large, 1–2 inches broad; leaves large, 5–10 inches broad; stems not prickly but bristly; fruit broad, 1 inch, flat, orange to red. (**B.**)

B. Flowers rose-purple in large clusters. PURPLE-FLOWERING RASPBERRY (246) — Rubus odoràtus.

B. Flowers white in smaller clusters. SALMON BERRY. WHITE-FLOWERING RASPBERRY — Rubus parviflòrus.

A. Flowers small, ½ inch, white; leaves small, 2–4 inches; stems reddish, smooth with a few straight prickles. An excellent plant for covering waste places. HAWTHORN-LEAVED RASPBERRY — Rubus cratægifòlius.

* Leaves compound 3- (rarely 5-), bladed; fruit raspberry- or cap-shaped. (**C.**)

C. Fruit red (rarely yellow or whitish); stems prickly and often slightly bristly. WILD RED RASPBERRY — Rubus idæus aculeatíssimus (R. strigòsus).

C. Fruit red, small, nearly inclosed in an enlarged calyx; stems densely clothed with brown glandular hairs; leaves white-hairy beneath. WINEBERRY — Rubus phœnicolàsius.

C. Fruit black; stems recurving and rooting at tips with straight prickles but no bristles. BLACKCAP — Rubus occidentàlis.

C. Fruit black; stems upright or ascending, with stout recurved prickles; leaves white-woolly beneath. SAND BLACKBERRY — Rubus cuneifòlius.

* Leaves compound, 3–7-bladed; stems long, only half ascending, rising about 2 feet from the ground, armed with strong recurved prickles; fruit solid, blackberry-like. DEWBERRY — Rubus villòsus.

* Leaves pinnate of 5–15 narrow notched blades; flowers large, 1½–2 inches broad, white; fruit thimble-shaped, large, 1–1½ inches long, bright red, not very edible; erect, tall, kills to the ground North but hardy and evergreen South. STRAWBERRY-RASPBERRY (247) — Rubus rosæfòlius.

With hairy and hispid stems, var. sorbifòlius.

With double flowers, BRIER 'ROSE' or BRIDAL 'ROSE' — Var. coronàrius (R. grandiflòrus).

* Leaves of many sharply notched blades forming a twice-compound foliage. The three primary divisions are divided into many blades somewhat in a pinnate way. The canes and leaves have many recurved sharp prickles. In warm countries the canes persist till they become as thick as the wrist, and form tall bushes with almost evergreen leaves; in the North they show a tendency to spread over the ground. The black fruit ripens from summer till Oct. CUT-LEAVED or EVERGREEN BLACKBERRY (248) — Rubus laciniàtus.

Ròsa. The ROSE is the most universally admired and cultivated plant in gardens. It would need a large volume to do the plant justice or to describe in an intelligent way the many thousand named species and varieties. All that will be attempted here is a description of the most

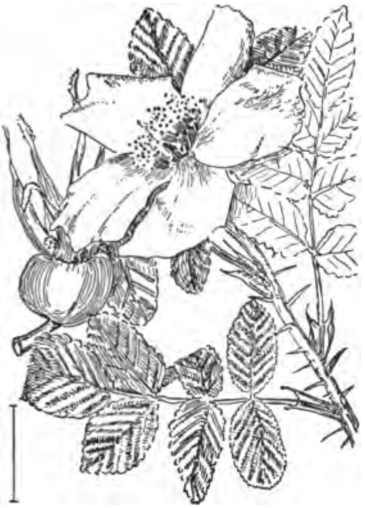


FIG. 249. — Japanese Rough-leaved Rose.

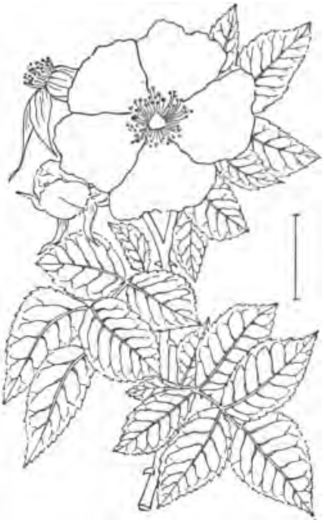


FIG. 250. — Dog Rose.

beautiful and the most popular of the single-flowering species, followed by a key to a few single-flowered forms extensively cultivated.

JAPANESE ROUGH-LEAVED ROSE (249) — Rosa rugòsa — is a beautiful upright shrub (6 feet) with stout stems thickly covered with both prickles and bristles. The leaves have 5 to 9 rough thick shining dark green blades with the lower sides lighter and more or less pubescent. The flowers are usually single, purple or white, 2½ to 3½ inches broad, blooming from May to September. The fruit, which soon forms, is large, 1 inch, brick-red and remains on till winter. This is the most ornamental of all roses for the shrubbery and is especially fine in its foliage. There are many named varieties, including a few with somewhat double flowers. From eastern Asia.

[Twig cuttings; seeds; root cuttings; layers.]

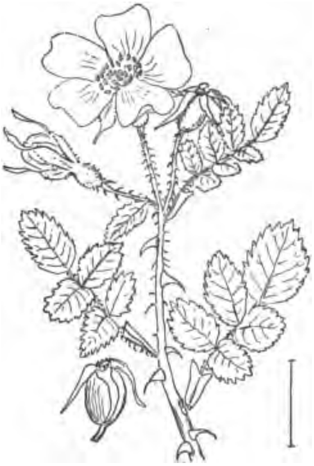


FIG. 251. — Sweetbrier.

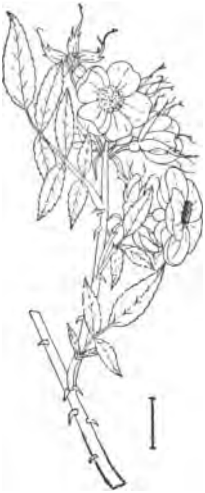


FIG. 252. — Swamp Rose.

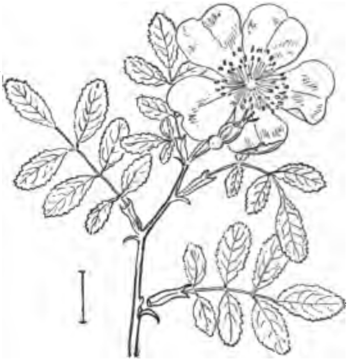


FIG. 253. — Glossy Rose.

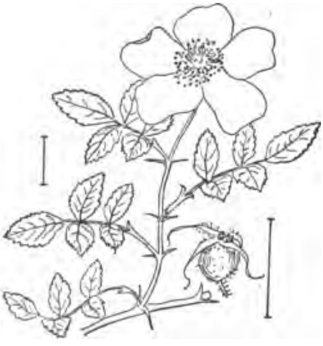


FIG. 254. — Pasture Rose.

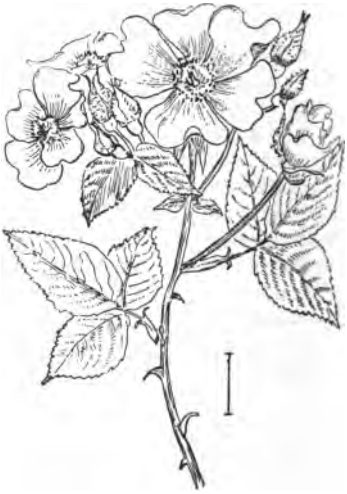


FIG. 255. Prairie Rose.

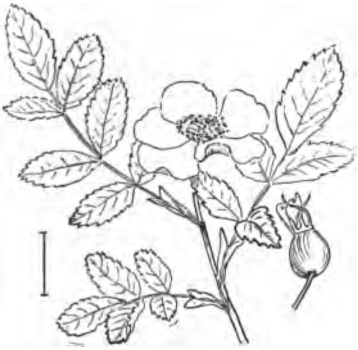


FIG. 256. — Early Wild Rose.

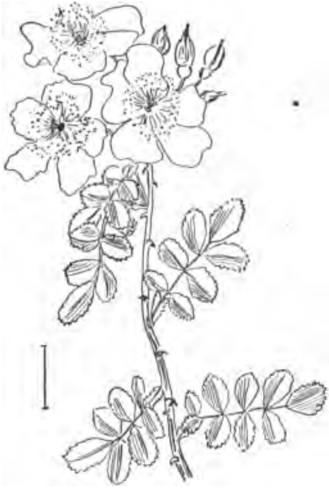


FIG. 257. — Memorial Rose.

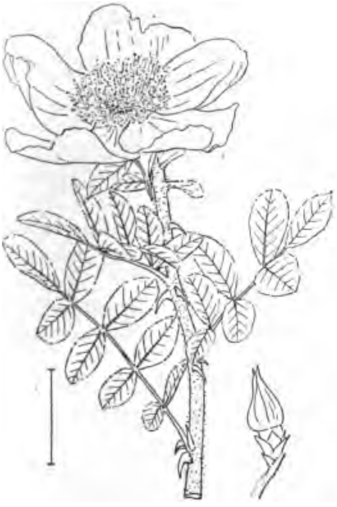


FIG. 258. — Macartney Rose.

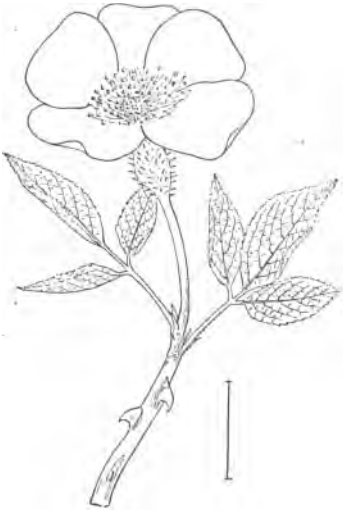


FIG. 259. — Cherokee Rose.

KEY TO SOME POPULAR SINGLE ROSES

* Stems more or less densely covered with both prickles and bristles; sepals remaining on the large globular fruit. Erect shrubs with no tendency to climbing habit. (**A.**)

- **A.** Tall, to 6 feet; leaves with 5–9 rough thick shining oval blades; flowers about 3 inches broad, either white, pink, or purple; fruit (1 inch) brick-red with long more or less spreading sepals. Japanese Rough-leaved Rose (249) — Rosa rugòsa.
- **A.** Low, bushy, 1–4 feet; leaves with 3–9 often resinous blades; flowers solitary, about 2 inches broad, deep rose color; fruit (½–1 inch) with long erect sepals. Prickly Rose — Rosa aciculàris.
- **A.** Low, 1–4 feet; leaves with 7–11 small, 1 inch or less, smooth not resinous blades; flowers clustered; fruit smooth (½ inch), with long spreading sepals. Arkansas Rose — Rosa arkansàna.

* Stems armed with stout recurved spines or prickles and without soft hairs (except possibly at base); sepals of the calyx spreading and dropping off from the fruit. Straggling bushes with a slight tendency to climbing habits. All are deciduous. (**B.**)

- **B.** Fruit oblong and nearly smooth (½–¾ inch long); leaf-blades 5–7, coarsely serrate. (**C.**)
  - **C.** Leaf-blades regularly once-serrate. Dog Rose (250) — Rosa canìna.
  - **C.** Leaf-blades twice-serrate. Sweetbrier or Eglantine (251) — Rosa rubiginòsa.
- **B.** Fruit globular and bristly, about ⅓ inch long. (**D.**)
  - **D.** Leaf-blades 5–9 (commonly 7), finely serrate. (**E.**)
    - **E.** Leaf-blades elongated, thin. Swamp Rose (252) — Rosa carolìna.
    - **E.** Leaf-blades thick, dark green and shining above; stems brownish red. Glossy Rose (253) — Rosa virginiana (R. lùcida).
  - **D.** Leaf-blades commonly 5 (rarely 7), coarsely serrate; fruit with spreading and early deciduous sepals. Pasture Rose (254) — Rosa hùmilis.
  - **D.** Leaf-blades 3 (rarely 5), hairy beneath; flowers deep red fading to whitish; plant often decidedly climbing. Prairie Rose (255) — Rosa setígera.
- **B.** Fruit globular; with erect persistent sepals, nearly ½ inch in diameter, smooth or nearly so; stems nearly free from prickles. Early Wild Rose (256) — Rosa blánda.

* Prostrate creeping rose much used to cover banks; leaf-blades commonly 9, very glossy and almost evergreen. Often used for arbors. Memorial Rose (257) — Rosa Wichuraiàna.

* Southern nearly or quite evergreen roses fully hardy only in the Gulf states, though found in protected places north to Virginia. Flowers large, 2–3½ inches, white (rarely pinkish) with thick waxy petals. Handsome roses with dark shining foliage having stems 10–20 feet long with spreading or somewhat climbing habit. (F.)

F. Leaves with 5–9 blades; calyx with notched bracts at the base and densely silky with hairs; fruit retaining the calyx lobes. Macartney Rose (258) — Rosa bracteàta.

F. Leaves with 3 (rarely 5) blades; fruit obovoid and without calyx lobes when ripe. Cherokee Rose (259) — Rosa. cherokénsis (R. lævigàta).

Neviùsia alabaménsis. Snow Wreath (260) grows 3 to 8 feet high with alternate straight-veined doubly serrate simple leaves 1½ to 3½ inches long. The flowers extend along the wand-like arching stems for several feet, forming ropes of fringe-like flowers, in summer. To the eye these flowers consist only of a mass of stamens. The fruit are silky-coated and

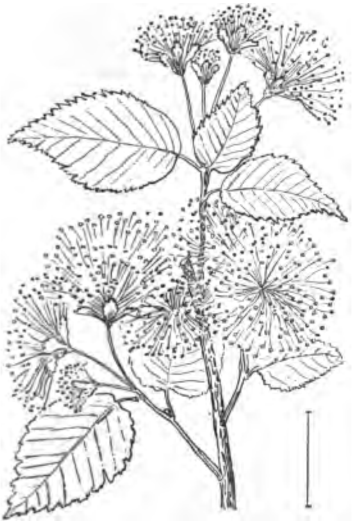


Fig. 260. — Snow Wreath.

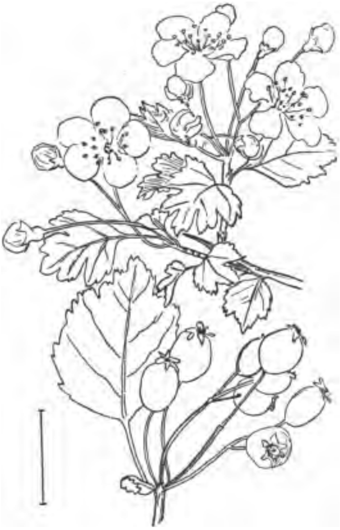


Fig. 261. — English Hawthorn.

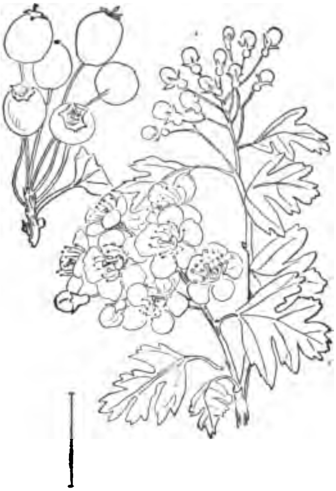


Fig. 262. — Hawthorn.

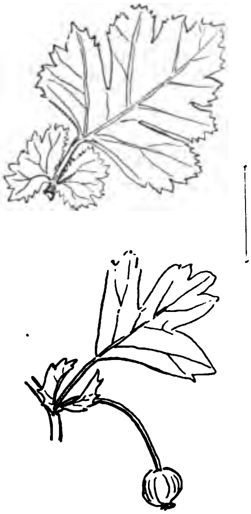


Fig. 263. — Parsley-leaved Haw.

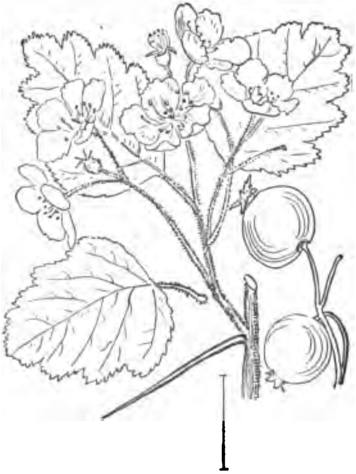


Fig. 264. — Red Haw.

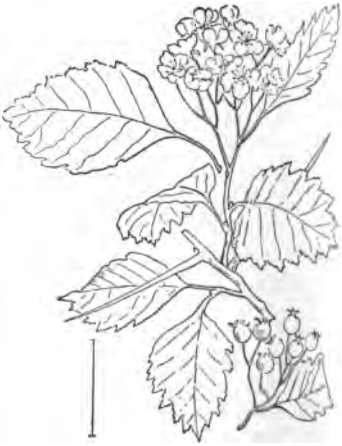


Fig. 265. — Long-thorned Haw.

seed-like. This exceedingly ornamental and peculiar plant is hardy, with protection, north to Massachusetts and blooms every year. [Seeds.]

Cratægus. The HAWS, THORNS, and HAWTHORNS are, in the main, thorny shrubs but about half of the species grow occasionally to a height which would entitle them to the name of trees and a few are always tree-like. Of the hundreds of species, given in modern botanic works, which are to be found wild in America and Europe, only a few are in general cultivation. The simple alternate more or less notched or lobed leaves, thorny branches, five-petaled flowers ½ to 1 inch broad, in clusters, and the pome or apple-like fruit characterize the genus. The flowers are usually white, sometimes pink or red, and are in a few cases double. The fruit, which except in the double forms is abundant, is rounded, small, and tipped with the conspicuous remains of the calyx.

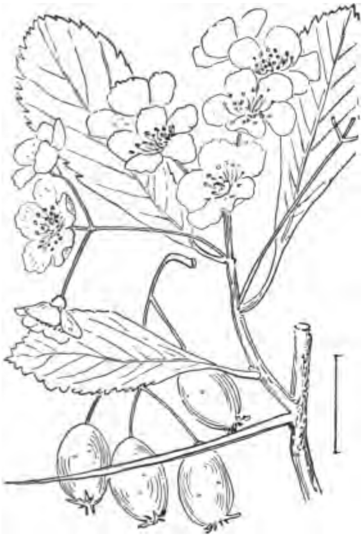


FIG. 266. — Large-fruited Thorn.

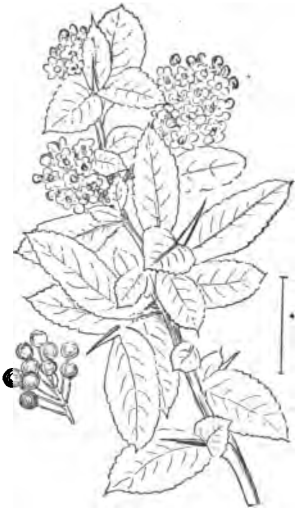


FIG. 267. — Evergreen Thorn.

The commonest Hawthorns in cultivation are two species from Europe which are sold under a score or more of varietal names. These two are much alike and are mainly sold under the one name of ENGLISH HAWTHORN or MAY (261) — Cratægus Oxyacántha — though more often they belong to another species, Cratægus monógyna. This latter has usually one stone in the hairy-stemmed fruit; while the true Cratægus Oxyacantha has two grooved stones in smooth-stemmed fruit. Not only is Cratægus monogyna much the commoner in cultivation in America but it has many more named varieties. A good idea of the variation in this species can be gained from the names given them: laciniàta, cut-leaved; quercifòlia, oak-leaved; hórrida, very thorny; péndula, weeping; strícta, very upright; variegàta, variegated-leaved; álba plèna, white-double-flowered; rùbra plèna, red-double-flowered; bícolor, two-colored (white flowers with pink edges); Paùli, Paul's double scarlet. Of the true Crataegus Oxyacantha there is a very distinct and showy variety, xanthocárpa, with bright yellow fruit.

[Seeds (1–2 years to grow); twig cuttings.]

KEY TO A FEW OF THE MORE ORNAMENTAL SPECIES OF CRATÆGUS, INCLUDING PYRACÁNTHA

* Leaves decidedly lobed. (**A.**)

- **A.** Fruit ¼ inch or more wide and retaining the calyx. (**B.**)
  - **B.** Fruit oval with one stone; stems of flowers and fruit usually distinctly hairy. Hawthorn (262) — Cratægus monógyna.
  - **B.** Fruit nearly globular with two stones, each with two grooves on the inner side. English Hawthorn or May (261) — Cratægus Oxyacántha.
- **A.** Fruit small, only about ⅛ inch wide, and with deciduous calyx. (**C.**)
  - **C.** Leaves deeply cleft, sometimes divided nearly to the midrib, ¾–1½ inches long; fruit dropping in the early winter; spines stout, 1–1½ inches long. Parsley-leaved Haw (263) — Cratægus Marshállii (C. apiifòlia).
  - **C.** Leaves less deeply cleft and larger, 1½–2 inches long; fruit remaining on through the winter; spines slender, 1½–2 inches long. Washington Thorn — Cratægus Phænopỳrum (C. cordàta).

* Leaves doubly serrate rather than lobed, broad at base. (**D.**)

- **D.** Leaves thick; flowers large, ¾–1 inch wide, with yellow anthers; fruit with 3–5 stones. (**E.**)
  - **E.** Leaves widest at or beyond the middle; stamens 10; fruit nearly globular, ½ inch, dark crimson, ripening late in Oct. and soon dropping. Scarlet Haw — Cratægus coccínea.
  - **E.** Leaves widest near the base; stamens 20; fruit ripening in Aug., large, ¾–1 inch, pubescent, scarlet with darker dots, on drooping stems, flesh yellow, dry and mealy. Red Haw (264) — Cratægus móllis.

E. Leaves widest near the middle; stamens 8–12; fruit globular (⅓ inch), crimson, ripening near end of Sept. and remaining on for several weeks on erect slender stems; thorns slender, long, 2–4 inches. LONG-THORNED HAW (265) — Cratægus macracántha.

D. Leaves thin, only half as wide as long, and widest near the center; flowers ½ inch wide; stamens 20 with rose-colored anthers; fruit oval or pear-shaped, ½ inch long, dull red, with 2–3-stones; spines slender, straight (1–2 inches). PEAR HAW — Cratægus Chapmàni Plukenètii. (C. tomentosa of the Linnean herbarium.)

* Leaves deciduous, narrow and unnotched at base, somewhat wedge-shaped, notched at end, and sometimes somewhat 3-lobed at tip. (**F.**)

F. Tall shrubs or small trees occasionally 30 feet high with many-flowered clusters. (**G.**)

G. Leaves wedge-shaped, usually thick, dark green and shining above (1–4 inches long); fruit globose (½ inch long) with greenish dry and mealy flesh and usually 2 stones, ripening in Oct. and lasting through the winter; stamens 10 with rose-colored anthers. COCKSPUR THORN — Cratægus Crus-gálli.

G. Leaves obovate, sometimes slightly lobed beyond the middle, 2–3 inches long; fruit red or yellow with white dots, oblong (¾ inch), on stout, drooping stems, ripening and falling in Oct.; stamens 20 with rose-colored, or yellow, anthers. LARGE-FRUITED THORN (266) — Cratægus punctàta.

G. Leaves spatulate or oblanceolate, often 3-lobed at the end, 1–2 inches long; fruit globose, small, ⅛ inch, ripening in Oct.; stamens 20 with rose-colored anthers. SMALL-FRUITED THORN — Cratægus spathulàta.

F. Small shrub 3–10 feet high; flowers usually solitary, ½ inch broad; leaves ¾–1¾ inches long; thorns numerous, ½–2 inches long; fruit globose, yellow, ½ inch. ONE-FLOWERED THORN — Cratægus uniflòra (C. tomentosa of the Linnean description).

* Leaves evergreen, small, ¾–1¾ inches long, narrow with crenulated edges; flowers white, small, in clusters, stamens about 20 with yellow anthers; fruit small, ⅕ inch, bright red (rarely yellow or white), remaining on through the winter; twigs ending in many sharp thorns. Usually small shrubs rarely 10 feet high; hardy to Massachusetts if somewhat protected, genus Pyracántha, often called Cratægus. (**H.**)

H. Young twigs grayish-pubescent; leaves lanceolate, ¾–1¾ inches long; fruit bright red, orange, or white. EVERGREEN THORN

(267) or Fire Thorn — Cotoneáster Pyracántha (Pyracantha coccínea).

H. Young twigs rusty-pubescent; leaves somewhat longer, narrower and more glossy; fruit orange-red. Pyracantha crenulata (Cratægus crenulàta).

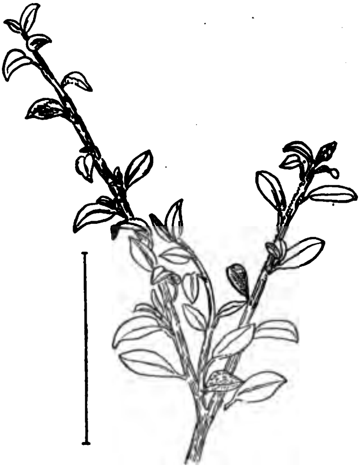


Fig. 268. — Small-leaved Cotoneaster.

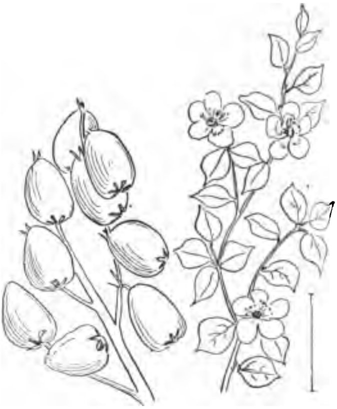


Fig. 269. — Evergreen Cotoneaster.

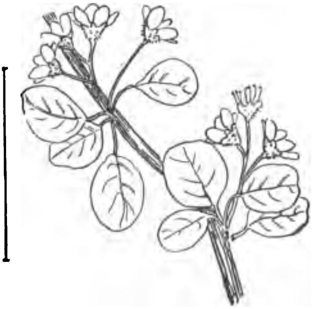


Fig. 270. — Round-leaved Cotoneaster.

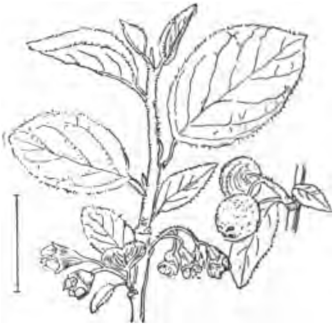


Fig. 271. — Common Cotoneaster.

Cotoneáster. The Cotoneasters are low shrubs with alternate small entire-edged thick leaves usually white-hairy below. The flowers, usually clustered, are small, five-petalled, white or flesh-colored, in spring, stamens about 20. The fruit is a red or reddish drupe-like berry with 2 to 5 stones, remaining on through the winter. These are excellent plants for dry sunny places. Most of the species are hardy as far north as New York and all have decorative value in their fruit if not their flowers.

[Seeds; twig cuttings for evergreen species.]

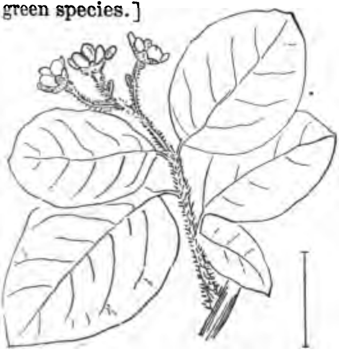


Fig. 272. — Woolly Cotoneaster.

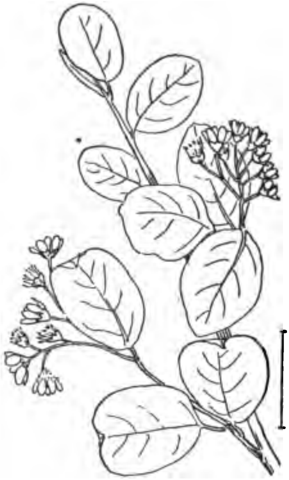


Fig. 273. — Chinese Cotoneaster

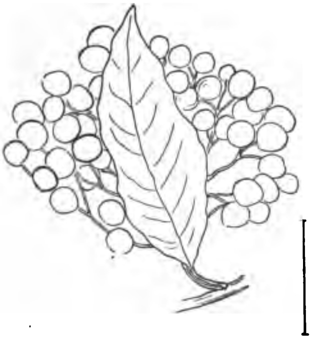


Fig. 274. — Cotoneaster.

KEY TO THE SPECIES OF COTONEASTER

* Low prostrate plants with small leaves, ¼–¾ inch long, evergreen or nearly so; pink or white flowers in clusters of 1–3 and bright red berries. Excellent for rockeries. (**A.**)

- **A.** Leaves round-oval, pointed, ⅓–⅔ inch long; flowers pink with erect petals, in June; fruit oblong, bright red. Prostrate Cotoneaster — Cotoneaster horizontàlis.
- **A.** Leaves wedge-shaped, shining above and densely hairy below; flowers (¼–½ inch long) white with spreading petals, May, June. Small-leaved Cotoneaster (268) — Cotoneaster microphýlla.
- **A.** Similar to the last but with rather dull oval leaves ⅓–½ inch long. Box-leaved Cotoneaster — Cotoneaster buxifòlia.
- **A.** Similar to the last but of more upright growth; leaves more rounded, hairy below; the bright red fruit remaining on through the winter. Evergreen Cotoneaster (269) — Cotoneaster rotundifòlia.
- **A.** Leaves roundish to obovate, ½–¾ inch long, grayish or whitish beneath, smooth above; flowers white in 3–6-flowered clusters with spreading petals, May, June. Round-leaved Cotoneaster (270) — Cotoneaster nummulària orbiculàris.

* More or less erect shrubs reaching the height of 4 or 6 feet. (**B.**)

- **B.** Leaves white-hairy beneath; flowers with erect petals; fruit red. (**C.**)
  - **C.** Flowers pale-pinkish in small nodding clusters, May, June; leaves smooth, dark green above, thick, oval (¾–2 inches long); fruit globular, bright red. Common Cotoneaster (271) — Cotoneaster vulgàris.
  - **C.** Flowers 3–12 in cluster, white, June; leaves dull green above (1–2½ inches long), oval, blunt; fruit bright brick-red. Woolly Cotoneaster (272) — Cotoneaster tomentòsa.
- **B.** Leaves green both sides; flowers with spreading white or pinkish petals in 2–5-flowered clusters. (**D.**)
  - **D.** Leaves small — ½–1 inch, roundish, pointed, nearly evergreen; fruit bright red. Simond's Cotoneaster — Cotoneaster Sìmonsi.
  - **D.** Leaves larger — 1½–3 inches long; flowers nodding; fruit deep red, oblong. Pointed-leaved Cotoneaster — Cotoneaster acuminàta.
- **B.** Leaves whitish beneath (½–1½ inches long), deciduous; flowers with spreading petals in erect many-flowered (3–20) clusters; fruit red. (**E.**)

E. 3–12-flowered clusters with short hairy stems; branches erect or spreading, sometimes prostrate. Round-leaved Cotoneaster — Cotoneaster nummulària.

E. Flowers in large 6–20-flowered clusters with smooth stems, May. Fine in flower but not free-fruiting. Chinese Cotoneaster (273) — Cotoneaster multiflòra.

* Large shrub to 20 feet, not hardy North. The largest and possibly the most beautiful species for both flowers and fruit. Flower-clusters very large, April, May; fruit scarlet; leaves oblong, acute at both ends, nearly evergreen (2–5 inches long), smooth above, hairy beneath when young. Cotoneaster (274) — Cotoneaster frígida.

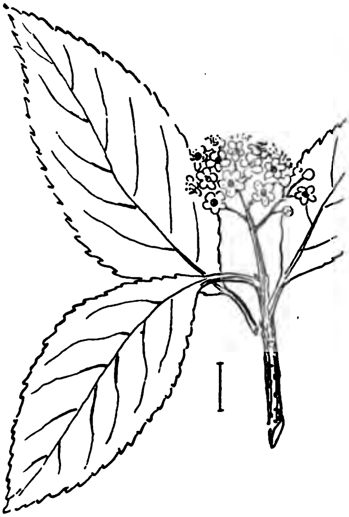


Fig. 275. — Panicled Photinia.

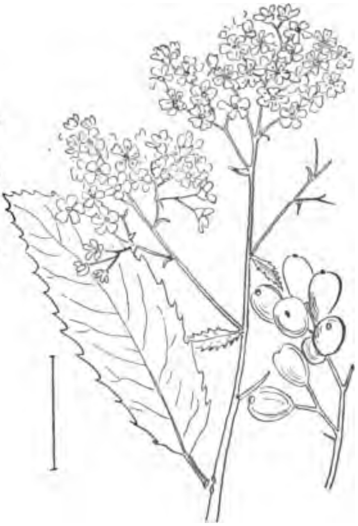


Fig. 276. — Toyon.

Photínia. The Photinias are tall shrubs or small trees from China and Japan with simple alternate usually notched leaves and small white flowers in large white clusters, in summer. The small but very decorative red fruit remain on the plants through much of the winter. The flowers and fruit are in rounded clusters, corymbs or panicles, 1½ to 6 inches broad. The flowers have 5 rounded petals and 10 to 20 stamens. The pome-like fruit is small, ¼ inch, one- or two-seeded with a hollowed or dented end. The evergreen species are hardy only South, but the decidu-

ous one can be grown north to Massachusetts. The fruits retain their color until midwinter and are not eaten by the birds.
[Seeds; twig cuttings; layers.]

KEY TO THE SPECIES OF PHOTINIA

* Leaves deciduous; flowers in corymbs 1½–3 inches broad; hardy to Massachusetts. Upright shrub to 15 feet with slender branches; leaves short-stemmed, broadening towards the tip, acute-pointed, sharply serrate, dark green and smooth above (1½–3 inches long); flowers white in clusters terminating short side-branches, June; pomes ⅓ inch long, bright scarlet on warty stems. CORYMBED PHOTINIA — Photinia villòsa.

* Leaves evergreen, smooth; flowers in large panicles, May–July; fruit bright red; hardy south. (**A.**)

A. Shrub to 20 feet; leaves dark shining above, yellowish green below, 5–7 inches long, finely serrate; flower- and fruit-clusters 6 inches broad, fruit ¼ inch, red, stamens 20; hardy with protection to Washington. PANICLED PHOTINIA (275) — Photinia serrulàta.

A. Shrub to 8 feet; leaves tapering at base, broadening near tip, finely serrate, 2–4 inches long; flower- and fruit-clusters 2-4 inches broad, stamens 20. SMOOTH PHOTINIA — Photinia glàbra.

A. Shrub or small tree to 20 feet; leaves broadening towards base, acute at both ends, sharply serrate, shining above (2–4 inches long); flower- and fruit-clusters broad, 2–5 inches; stamens 10; pomes bright red, ⅓ inch. CHRISTMAS BERRY or TOYON (276) — Photinia (Heteromèles) arbutifòlia.

Amelánchier. The JUNEBERRIES, SHAD BUSHES, or SERVICE-BERRIES are shrubs or small trees with early flowers having 5 usually long and narrow petals and many stamens. The small purple edible pomes are ripe in June and July. There are several varieties or species which are desirable shrubs, though infrequent in cultivation. The dwarf species furnish very good small sweet summer fruits with about 10 seeds. Until recent years about all the forms have been considered as varieties of one species, but now that the modern worker has taken hold of the matter no one can predict what the result will be. The early bloom, when the leaves are just appearing, with the elongated petals and the early ripening of the several-seeded sweet berry, will enable one to recognise the genus. The leaves are simple, alternate, feather-veined and with usually notched edges. The most easily recognized differences between the named species will be found in the foliage. [Seeds; suckers.]

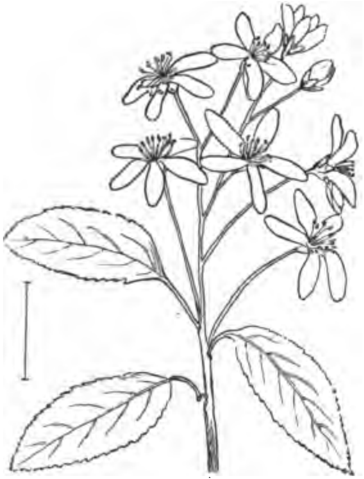


FIG. 277. — Shad Bush.

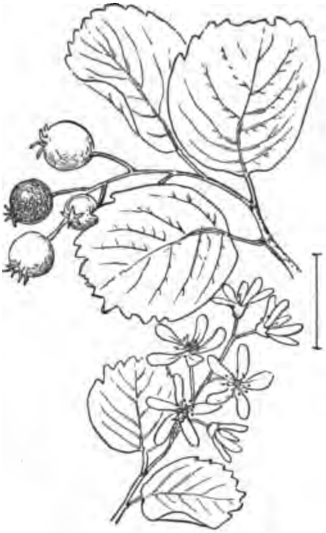


FIG. 278. — Alder-leaved Service-berry.

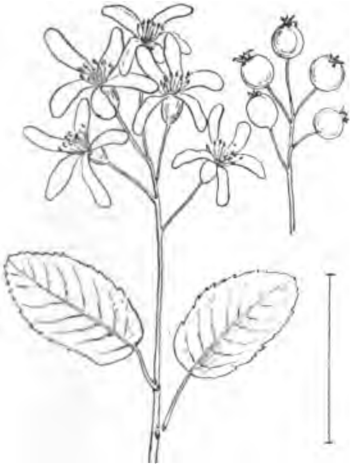


FIG. 279. — Low Juneberry.

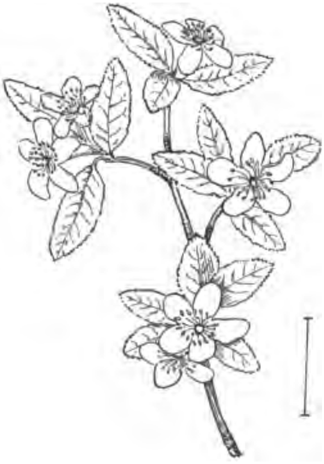


FIG. 280. — Oblong-fruited Juneberry.

KEY TO THE SPECIES OF AMELANCHIER

* Tall-growing more or less tree-like forms. (**A.**)

A. Upright round-headed tree 25–40 feet; leaves ovate with rounded or notched base (3–4 inches long), serrated edge, dark and dull green above; fruit ⅓–½ inch, red to purple with a bloom. SHAD BUSH or SERVICE-BERRY (277) — Amelanchier canadénsis.

A. Shrub or small tree, though sometimes reaching the height of 30 feet; leaves oval-oblong pointed at tip, rounded and sometimes notched at base, densely white-woolly beneath when young and somewhat so even in age; flower-clusters short and many-flowered, petals ½ inch long; fruit globular (⅓ inch). SHAD BUSH or COMMON DWARF or NORTHWESTERN JUNEBERRY — Amelanchier canadénsis Botryàpium (A. Botryapium).

A. Shrub or tree 12 feet with broad blunt coarsely notched thick leaves (1–1½ inches broad and long); fruit large — sometimes nearly 1 inch, dark blue to black. ALDER-LEAVED SERVICE-BERRY (278) — Amelanchier alnifòlia.

* More shrubby growths (oligocárpa, the tallest, less than 10 feet). (**B.**)

B. Low straggling bush with rounded coarsely notched leaves (1-3 inches long); petals ¾ inch long. ROUND-LEAVED JUNEBERRY — Amelanchier spicata (A. rotundifòlia).

B. Low, 1–3 feet high; leaves ¾–1½ inches long usually rounded at both ends, serrate; petals short and only about ¼ inch long. LOW JUNEBERRY (279) — Amelanchier spicàta.

B. Shrub 2–9 feet high with nearly solitary flowers (1 to 4); leaves narrow — about 3 times as long as broad, sharply serrate; fruit pear-shaped (½ inch long). OBLONG-FRUITED JUNEBERRY (280) — Amelanchier oligocárpa.

Pỳrus. The PEARS — Pỳrus, APPLES — Màlus, QUINCES — Cydònia, MOUNTAIN ASHES — Sórbus, CHOKEBERRIES — Arònia, and MEDLARS — Méspilus — are often united into the one generic group Pỳrus and for our purpose are placed in one key. Most of the species are cultivated for their useful fruits and are trees in form and size and so not properly included here. A few are always shrubby and some are very ornamental.

The most extensively cultivated species is JAPAN OR FLOWERING QUINCE (281) — Pyrus japónica, — a thorny shrub with large red, scarlet, or white flowers in early spring, about the time the leaves expand. The large not very edible quince-like fruit is ripe in the fall. The leaves are alternate, simple, notched, and have at their bases conspicuous stipules. The flowers, if single, have 5 nearly orbicular petals and usually grow in

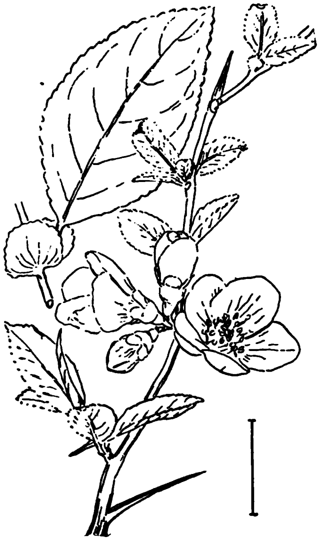


Fig. 281.—Japan Quince.

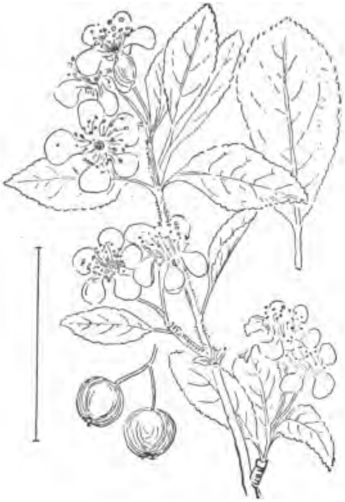


Fig. 282.—Red Chokeberry.

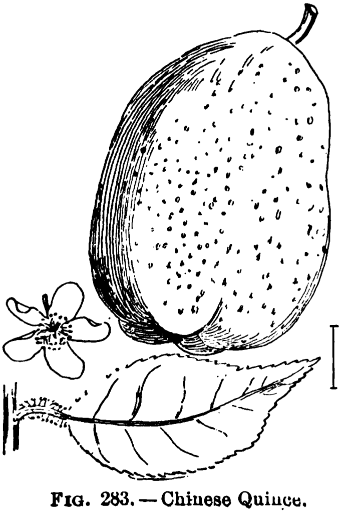


Fig. 283.—Chinese Quince.

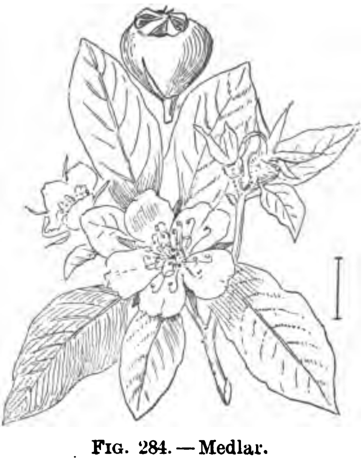


Fig. 284.—Medlar.

clusters of 2 to 3. There are a dozen or more varieties in cultivation differing in color or doubling of the flowers and in the spreading or upright character of the shrub. The plant is a fine one for hedges or the shrubbery; height about 5 feet. The usual name in catalogues is Cydonia japónica.

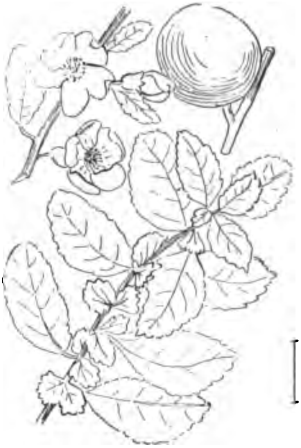


Fig. 285. — Dwarf Flowering Quince.

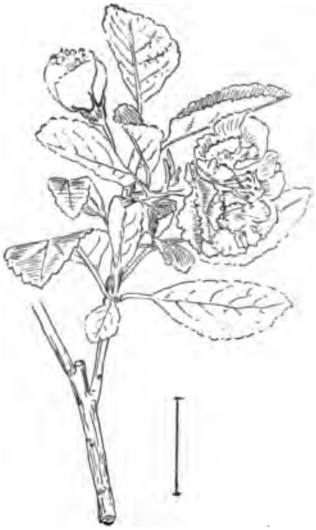


Fig. 286. — Narrow-leaved Crab Apple.

Common or Red Chokeberry (282) — Pyrus arbutifòlia — is an upright or spreading shrub (2–12 feet) with alternate simple serrate leaves (1½–3 inches long); the white or pinkish-tinted flowers are ½ inch wide in broad clusters, 1 to 2 inches wide, March to May. These clusters of flowers, as well as the under sides of the leaves, are very grayish-hairy. The nearly globular pomes are red, about ¼ inch across, ripe in August and remain on till late fall or early winter. There is a closely related species with smoother leaves and black fruit which soon falls, Black Chokeberry — Pyrus nigra, — also one with purple fruit, Purple Chokeberry — Pyrus atropurpùrea. [Seeds.]

KEY TO THE SHRUBBY AND MORE ORNAMENTAL SPECIES OF PYRUS

Species with simple leaves, including Malus, Cydonia, Aronia, and Mespilus. For the pinnate-leaved Mountain Ashes — Sorbus, see p. 186.

* Fruit large, 1–6 inches, yellow or greenish yellow; very aromatic, with 5 many-seeded cells. QUINCES — Cydonia. (**A.**)

A. Stipules small; shrubs or small trees to 15 feet; cultivated for fruit. (**B.**)

B. Leaves entire-edged; flowers white or light pink (2 inches broad); fruit light yellow (2–4 inches broad). COMMON QUINCE — Pyrus vulgàris.

B. Leaves finely serrate; flowers light pink; fruit dark yellow, oblong (4–6 inches long). Hardy to Philadelphia and highly ornamental. CHINESE QUINCE (283) — Pyrus (Cydònia) sinénsis.

B. Leaves finely serrate; flowers about single, large, white; fruit when ripe (after frost) brown, round (1½ inches broad), and with the top of the ovaries exposed. Hardy to central New York. MEDLAR (284) — Pyrus (Mespilus) germánica.

A. Stipules large; spiny shrubs under 6 feet high, cultivated for ornament; flowers in leafless clusters, March, April. Hardy north. (**C.**)

C. Shrub 3–6 feet; flowers white, pink, scarlet, orange, etc., sometimes double. JAPAN or FLOWERING QUINCE (281) — Pyrus (Cydonia) japónica.

C. Shrub 1–3 feet; flowers orange-scarlet; foliage sometimes variegated with pink and white. DWARF FLOWERING QUINCE (285) — Pyrus (Cydonia) Maùlei.

* Fruit ½–1 inch, usually very sour, red or red-cheeked, the cells of the fruit few-seeded. CRAB APPLES — Malus. (**D.**)

D. Leaves serrate but not lobed at end. Japan species. (**E.**)

E. Flowers rose-colored in few-flowered clusters; spreading bush or small tree. RINGO CRAB — Pyrus Ríngo.

E. Flowers red in many-flowered clusters on red stems; fruit remaining through the winter. KAIDO CRAB — Pyrus Kàido.

D. Leaves coarsely serrate and often lobed at end. American species; usually trees. (**F.**)

F. Flowers white (1 inch wide) blooming when leaves are grown. OREGON CRAB APPLE — Pyrus fúsca.

F. Flowers rosy-red, fragrant, blooming with the leaves. (**G.**)

G. Leaves broad, often lobed. WILD or AMERICAN CRAB APPLE — Pyrus coronària.

G. Leaves narrow, thick and not lobed. NARROW-LEAVED CRAB APPLE (286) — Pyrus angustifòlia.

* Fruit small, size of peas, on long stems in umbels. CHERRY CRAB APPLES from Asia — Malus. (**H.**)

H. Flowers small, white or pinkish; leaves very variable, often lobed; low bush to 30 feet. DWARF CRAB — Pyrus Toríngo.

H. Flowers rosy-red appearing with the leaves in large showy clusters; fruit red, not persisting till winter, seeds not especially large; plant often thorny. FLOWERING CRAB — Pyrus floribúnda.

H. Similar to the last but with large seeds; flowers often double. PARKMAN'S CRAB — Pyrus Halliàna.

* Flowers and small fruit in terminal compound clusters, cymes; shrubs to 12 feet. CHOKEBERRIES — Aronia. (**I.**)

I. Lower side of leaves and flower-clusters woolly; fruit red, remaining through the winter. RED CHOKEBERRY (282) — Pyrus arbutifòlia.

I. Leaves and flower-clusters nearly smooth; fruit black, ripe in Sept. and soon falling. BLACK CHOKEBERRY — Pyrus melanocárpa (P. nìgra).

I. Like the last, but with purple fruit. PURPLE CHOKEBERRY — Pyrus atropurpùrea.

Sórbus. Shrubs with compound leaves (the first species has fully separated blades only at base) and terminal clusters of small red fruit. The Mountain Ashes are generally tree-like in form and size, some reaching the height of 40 or 50 ft. [Seeds.]

KEY TO THE MORE SHRUBBY MOUNTAIN ASHES

* Leaves compound only at base with tips deeply notched; shrub or small tree to 15 feet. A hybrid form sold under many names. Pyrus (Sorbus) spùria.

* Leaves fully pinnate. (**A.**)

A. Leaves with 7–15 sharply serrate but rather blunt blades dark green above, pale beneath, 1½–3 inches long; winter buds glutinous and almost free from hairs. WESTERN MOUNTAIN ASH — Pyrus sitchénsis (P. (Sorbus) sambucifòlia).

A. Leaves with 11–15 long-pointed blades about 2 inches long; winter buds with long white hairs; branchlets red, glossy and smooth. Pyrus (Sorbus) thianschánica.

Calycánthus (or Butnèria). The SWEET-SCENTED SHRUBS or CAROLINA ALLSPICES are popular shrubs much cultivated for their sweet-scented purple or reddish brown flowers in spring or early summer. The leaves are large, entire-margined, and opposite. The flowers have many

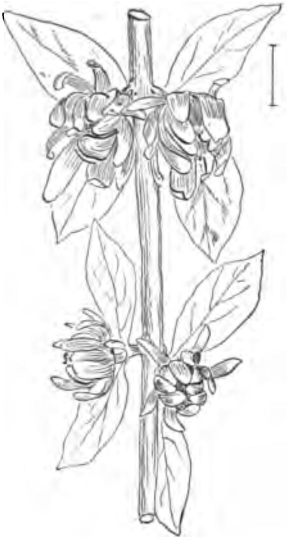


Fig. 287. — Strawberry Shrub.

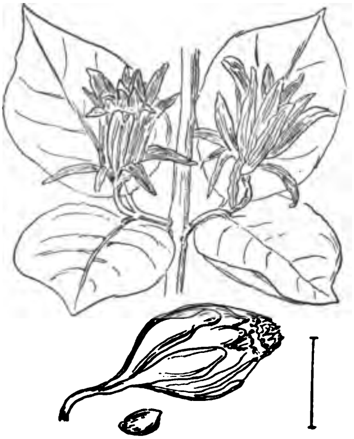


Fig. 288. — Glaucous Sweet-scented Shrub.

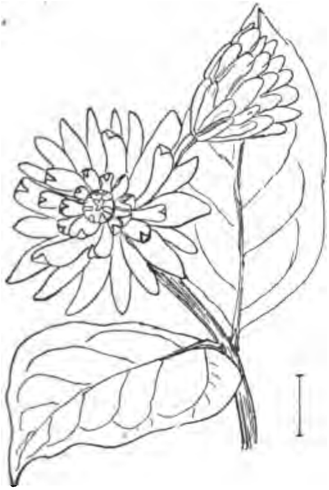


Fig. 289. — Western Sweet-scented Shrub.

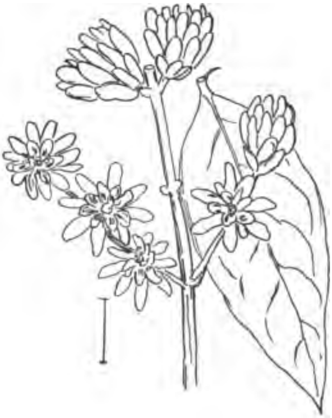


Fig. 290. — Oriental Sweet-scented Shrub.

thick petal-like parts which, when bruised, give off a strong strawberry-like odor. The fruit, not often produced, is a large (1½ to 2½ inches long) nodding pear-shaped affair much like a rose hip and filled with many large shining brown seeds. The species differ but little.

Three species are native to the eastern United States, one to California, and the others are from eastern Asia. The one most frequent in cultivation is Carolina Allspice or Strawberry Shrub (287) — Calycanthus flóridus. This has its leaves most densely-hairy beneath and has the most pleasantly scented flowers. The tallest species, to 12 feet, and the one with the largest leaves is Western Sweet Shrub — Calycanthus occidentàlis — from California.

[Seeds; layers; suckers; divisions.]

KEY TO THE SPECIES OF CALYCANTHUS

- * Winter buds small and without scales; flowers blooming after the leaves expand. (**A.**)
  - **A.** Bushes 3–6 feet high; flowers 1½–2 inches broad. (**B.**)
    - **B.** Leaves densely pubescent beneath. Strawberry Shrub (287) — Calycanthus flóridus.
    - **B.** Leaves smooth and green beneath. Carolina Allspice — Calycanthus fértilis.
    - **B.** Leaves whitish (glaucous) beneath. Glaucous Sweet-scented Shrub (288) — Calycanthus glaùcus.
  - **A.** Bushes tall, to 12 feet; flowers light brown, 3 inches broad; leaves green beneath, 4–6 inches long. Western Sweet-scented Shrub (289) — Calycanthus occidentàlis.
- * Winter buds larger and scaly; flowers blooming before the leaves expand. (Chimonánthus.) (**C.**)
  - **C.** Outer flower parts yellow, inner ones striped, flowers small; leaves thin, whitish beneath. Oriental Sweet-scented Shrub (290) — Calycanthus prǣcox.
  - **C.** Leaves thick, long-pointed, shining above. Thick-leaved Sweet Shrub — Calycanthus nìtens.

Escallònia. The Escallonias are evergreen shrubs or trees with scattered simple serrated leaves, viscid twigs, and strong-scented regular 5-petaled 5-stamened flowers in terminal clusters, in spring and summer. Fruit 2–3-celled dry capsule. They are hardy only in the Gulf states, though with protection may be cultivated north to Washington.

[Twig cuttings; layers; suckers.]

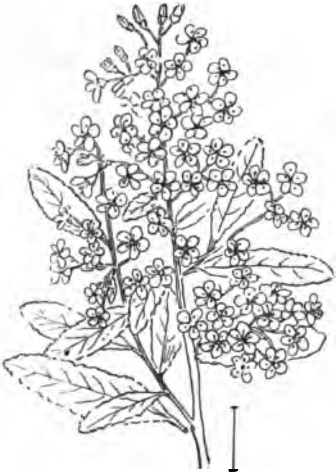


Fig. 291. — Montevideo Escallonia.

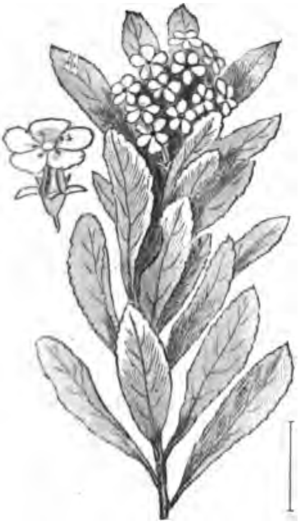


Fig. 292. — Organ Mountain Escallonia.

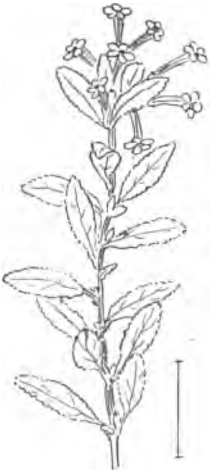


Fig. 293. — Red Escallonia.

KEY TO THE SPECIES OF ESCALLONIA

* Flowers white. (**A.**)

- **A.** Branches round; leaves 2–4 inches long, linear, minutely notched, short-stemmed; flowers ½ inch broad in large clusters. Montevideo Escallonia (291) — Escallonia montevidénsis.
- **A.** Branches triangular; leaves broader than the last and distinctly notched; shrub hairy all over. Hairy Escallonia — Escallonia pulverulénta.
- **A.** Branches rod-like, light brown; leaves narrow but broadest towards tip and practically sessile; flowers small in dense terminal clusters. The most hardy species. Wand-stemmed Escallonia — Escallonia virgàta.

* Flowers red or pink. (**B.**)

- **B.** Branches red and angled; leaves glossy; flowers pink in close terminal clusters; shrub 2–5 feet. Organ Mountain Escallonia (292) — Escallonia organénsis.
- **B.** Branches twiggy and grandular-hairy; leaves small, broader towards tip and sharp-toothed; flowers long and tubular, bright red in short clusters. Red Escallonia (293) — Escallonia rùbra.

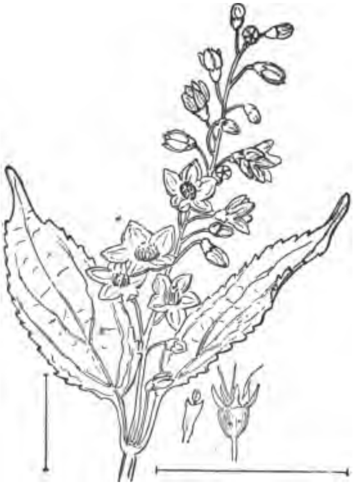


Fig. 294. — Slender Deutzia.

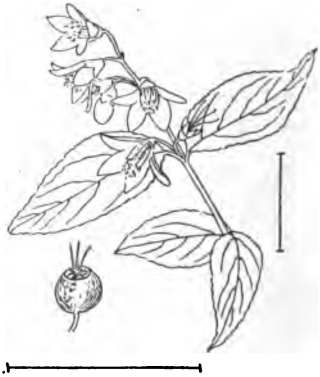


Fig. 295. — Rough-leaved Deutzia.

Deùtzia. The Deutzias are beautiful, nearly hardy Asiatic shrubs in extensive cultivation with clustered white or pink flowers in spring and summer. The opposite simple leaves are covered (as seen with a lens) with star-shaped hairs. The flowers, when single, have 5 thick petals and 10 stamens with broad flat stalks; they are in clusters (racemes, corymbs, and panicles) at the ends of the branches. The fruit is hemispheric with the calyx lobes, if not deciduous, on the broad end; the seeds are numerous in the 3 to 5 cells. The flowers are ½ to ¾ inch broad and the seed pod ⅛ to ¼ inch.

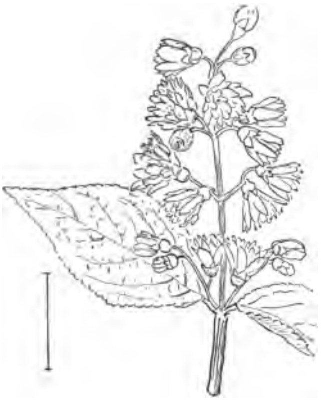


Fig. 296. — Rose-tinted Double Deutzia..

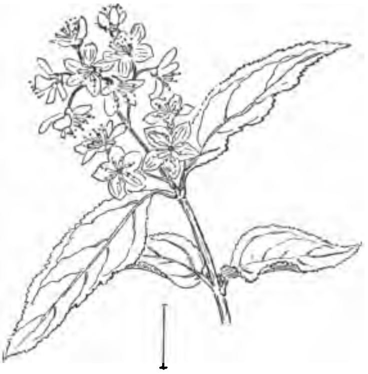


Fig. 297. — Lemoine's Deutzia.

The smallest species, Siebold's Deutzia — Deutzia Sieboldiána, — grows only 2 feet high, with white flowers in June, and is rare in cultivation. The next in size, Slender Deutzia (294) — Deutzia grácilis, — is about 3 feet high with slender and often arching branches, larger and more abundant white flowers in May and June, and is common; in this the stamens are much shorter than the erect petals.

There are several tall species, to 7 feet, with rough leaves and single or double, white or reddish flowers. The most common of these, Rough-leaved Deutzia (295) — Deutzia scàbra, — and its many varieties (crenáta, Pride of Rochester, Rose-tinted Double Deutzia (296), Wátereri, etc.) have erect petals, blooming June and July. The other species have spreading and, in the bud, more or less lapping petals, the flowers in broad flat clusters, corymbs. Several species have yellow or variegated foliage. [Twig cuttings; seeds.]

KEY TO THE SPECIES OF DEUTZIA

* Flowers in elongated clusters with the petals edge to edge, not lapping. (**A.**)

A. Low plant, 2 feet, with small light green rough leaves; flowers in compound clusters, panicles. SIEBOLD'S DEUTZIA — Deutzia Sieboldiàna.

A. Low plant, 3 feet, with small, bright green rather smooth leaves and flowers in nearly simple clusters, racemes. SLENDER DEUTZIA or BRIDAL WREATH (294) — Deutzia grácilis.

A. Tall plant, 6 feet, with dull green rough leaves (1–3 inches long); flowers in compound clusters, panicles. ROUGH-LEAVED DEUTZIA (295) — Deutzia scàbra.

* Flowers in broad clusters, corymbs. (**B.**)

B. Tall, 7 feet; flowers white with the petals edge to edge in the bud; leaves dark green above, much paler beneath. Deutzia díscolor.

B. 3–4 feet; petals edge to edge, pinkish outside; calyx red. PATUNG SNOW-FLOWER — Deutzia díscolor purpuráscens.

B. Spreading shrub to 3 feet; flowers white with petals partially lapping in the bud. LEMOINE'S DEUTZIA (297) — Deutzia Lemóinei.

B. Erect shrub to 6 feet; flowers with their petals decidedly lapping at their edges in the bud. SMALL-FLOWERED DEUTZIA — Deutzia parviflòra.

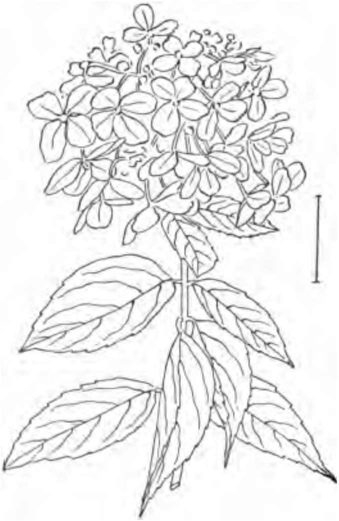


FIG. 298. — Large-flowered Hydrangea.

Hydrángea. The most popular shrub in cultivation North at the opening of the twentieth century was, probably, a variety of one of the 25 species of Hydrángeas, LARGE-FLOWERED HYDRANGEA (298) — Hydrangea paniculàta grandiflòra. The Hydrangeas have opposite simple serrated (rarely lobed) leaves. The flowers are usually of two kinds in large more or less rounded clusters, small ones with 4 or 5 petals and 8 or 10 stamens, producing small capsules with many seeds, and large ones with spreading petal-like parts having no stamens or pistils and so producing no seeds.

There is another genus of plants with such snowball-like clusters of sterile flowers, belonging to another family of plants. This is the genus of Viburnums, which also have opposite simple (sometimes lobed) leaves (see p. 219). The Viburnums are the earlier bloomers, all in bloom by the end of May, while of the Hydrangeas none are in bloom till late in June and a number bloom in July and August. The Viburnums practically all have white flowers and produce drupes with a large flat seed for fruit. The Hydrangeas have white, pink, blue, and red flowers and produce small pods with many seeds.

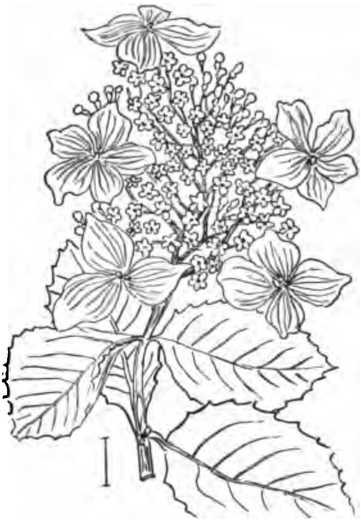


FIG. 299. — Japonica Hydrangea.

The last species given in the key is Hydrangea horténsis, from China and Japan. This is so frequently

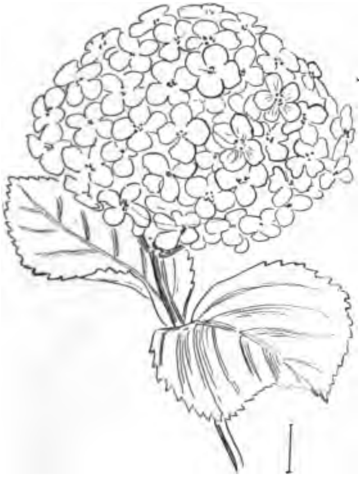


FIG. 300. — Hortensia Hydrangea.

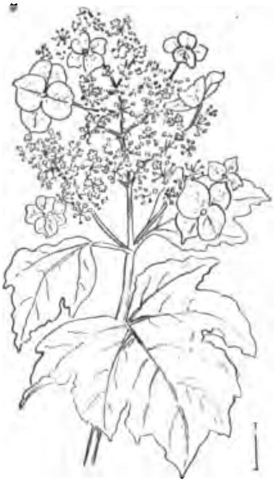


FIG. 301. — Oak-leaved Hydrangea.

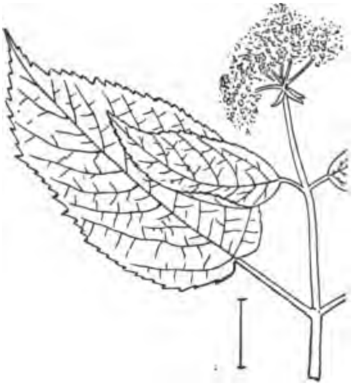


FIG. 302. — Wild Hydrangea.

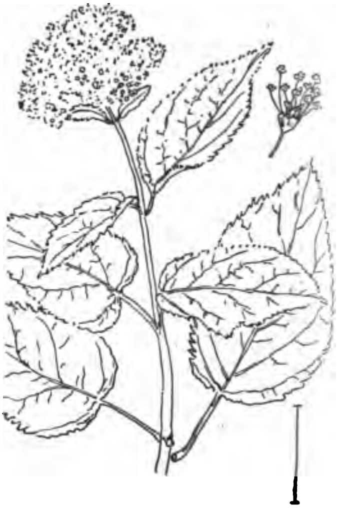


FIG. 303. — Heart-leaved Wild Hydrangea.

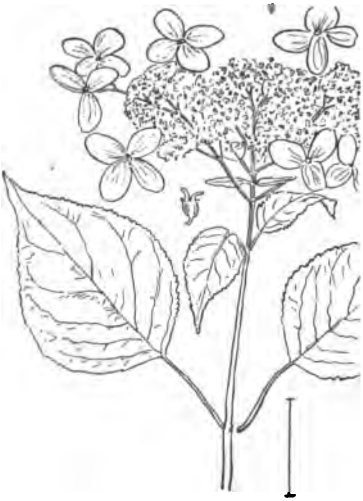


FIG. 304. — Gray Hydrangea.

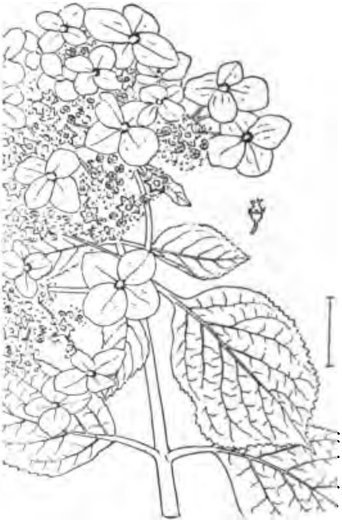


FIG. 305. — Nepal Hydrangea.

cultivated as a tub plant North and as a hardy plant South that it deserves a paragraph of description. It has been in cultivation for so many centuries by those most successful horticulturists of eastern Asia that there are hundreds of named varieties. These can be separated into three well-marked groups and for such a handbook as this no more, of practical value, can be included: —

1. The Japónica group with broad flat clusters of mixed sterile and fertile flowers (299).
2. The Horténsia group with nearly globular clusters of almost all sterile flowers (300).
3. The Stellàta group with flowers having many narrow divisions (sepals). [Twig cuttings; layers; suckers; divisions.]

KEY TO THE HYDRANGEAS

* Flowers abundant in large pyramidal clusters. (**A.**)

- **A.** Leaves not lobed, large, 2–5 inches long, serrate; flower-clusters 6–12 inches long, flowers whitish, the large, sterile ones changing to purplish (Aug., Sept.); capsule with the calyx at about the middle. (**B.**)
  - **B.** About half of the flowers sterile, July–Sept.; shrub or tree to 30 feet. PANICLED HYDRANGEA — Hydrangea paniculàta.
  - **B.** Three fourths of the flowers sterile and larger. ABUNDANT-FLOWERED HYDRANGEA — Hydrangea paniculàta floribúnda.
  - **B.** Nearly all the flowers sterile in extra large clusters. LARGE-FLOWERED HYDRANGEA (298) — Hydrangea paniculàta grandiflòra.
- **A.** Leaves 3–7-lobed, large, 4–8 inches long; flowers pinkish, June, July; shrub with spreading branches to 6 feet. OAK-LEAVED HYDRANGEA (301) — Hydrangea quercifòlia.

* Flowers in broad flat or globular clusters. (**C.**)

- **C.** Styles of the pistil usually 2; capsule with the calyx at the tip. (**D.**)
  - **D.** Flower-clusters wrapped, before expanding, with 6–8 large deciduous bracts; low shrub to 5 feet. Hydrangea involucràta.
  - **D.** No such bracts; erect shrubs 4–10 feet; leaves 3–6 inches long on long stalks. (**E.**)
    - **E.** Leaves nearly smooth on both sides, ovate to cordate. (**F.**)
      - **F.** Very few enlarged sterile flowers. WILD HYDRANGEA (302) — Hydrangea arboréscens.
      - **F.** About all the flowers sterile. HILLS OF SNOW — Hydrangea arboréscens stérilis.
      - **F.** Leaves especially broad and heart-shaped. HEART-LEAVED

WILD HYDRANGEA (303) — Hydrangea arboréscens cordàta.

E. Leaves densely whitish-hairy beneath; sterile flowers abundant at edge of cluster. GRAY HYDRANGEA (304) — Hydrangea radiàta.

C. Styles of the pistil usually 3; capsule with the calyx near the middle; leaves coarsely serrate; flowers more or less sterile (June, July).

G. Leaves densely pubescent beneath, 4–8 inches long; leaf stem deeply grooved and margined. NEPAL HYDRANGEA (305) — Hydrangea vestìta.

G. Leaves less pubescent and smaller, 3–5 inches long; leaf stem not margined; flower-cluster smaller but denser; hardy North. BRETSCHNEIDER'S HYDRANGEA — Hydrangea Brétschneideri.

G. Leaves large, 5–8 inches, almost smooth; flower-clusters large; flowers white, pink or bluish, few or all sterile; not fully hardy north of Washington; cultivated in hundreds of varieties South and as tub plants North. COMMON HYDRANGEA (299) (300) — Hydrangea horténsis.

Philadélphus. The SYRINGAS or MOCK ORANGES are among the most popular of ornamental shrubs. They can be known by the opposite simple deciduous leaves and the large, 1 to 2 inches, white or creamy

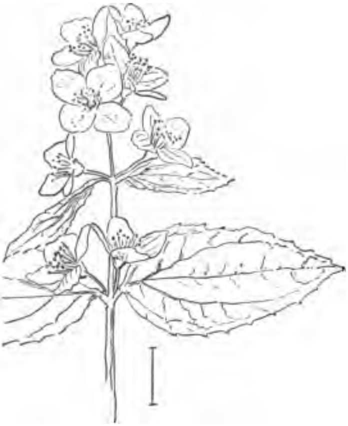


FIG. 306. — Golden Syringa.

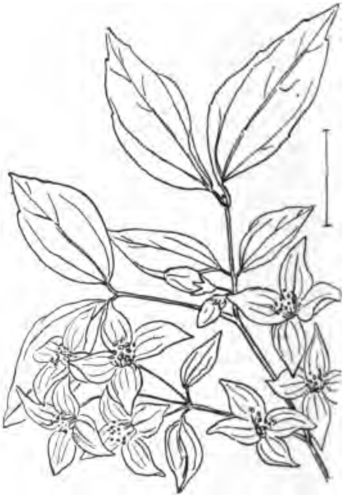


FIG. 307. — Falconer's Syringa.

broadly spreading, 4-petaled flowers, in clusters. These flowers are, generally, very sweet-scented, June and July, and have many stamens. The leaves are usually 3-ribbed from the base with margins generally notched and sometimes somewhat

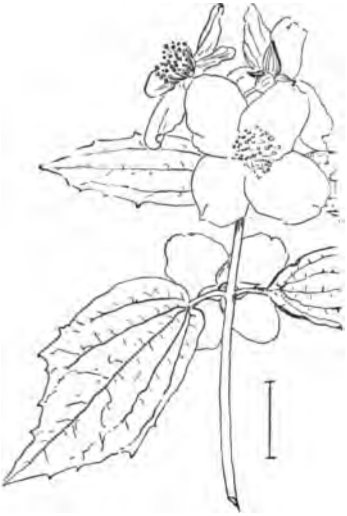


Fig. 308. — Large-flowered Syringa.

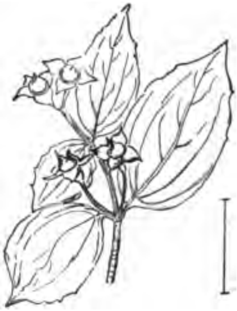


Fig. 309. — Hairy Syringa.

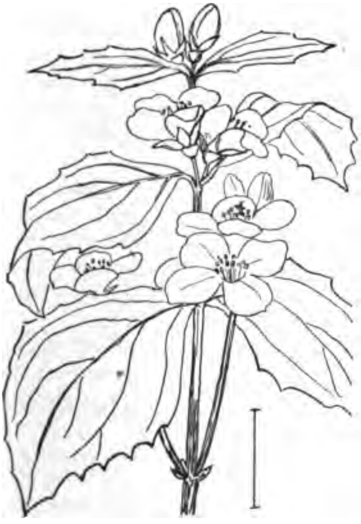


Fig. 310. — Broad-leaved Syringa.

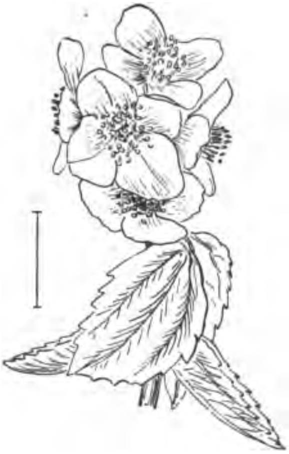


Fig. 311. — Gordon's Syringa.

lobed. The fruit is a dry hemispheric capsule above a 4-lobed broadly spreading calyx; this, when ripe, splits into 4 valves and has many seeds. The number of species (30) and especially the increasing number of hybrids render the forms difficult to distinguish. About all of the species are fully hardy North. It is unfortunate that the name Syringa was given by Linnæus to the lilacs. This has led to confusion between botanists and the people for 150 years. The public still use the name Syringa for these white-flowered shrubs.

The smallest species, 3 feet, Small-leaved Syringa, Philadelphus microphýllus, has entire-edged leaves (½–1 inch long) and deliciously fragrant flowers (1 inch) in clusters of 1 to 3. The commonest species, Mock Orange or Syringa — Philadelphus coronàrius — grows to the height of 10 feet with upright branches having clusters of 5 to 9 creamy-white very fragrant flowers. The most showy of all, Lemoine's Syringa — Philadelphus Lemóinei, — is a hybrid with abundant sweet-scented pure white flowers; the tips of the branches are arching.

[Twig cuttings; layers; seeds.]

KEY TO THE SPECIES OF MOCK ORANGES

* Bark of old branches peeling off in thin brown flakes. (**A.**)

A. Flowers creamy-white, very sweet-scented, in large 5–9-flowered dense clusters; leaves denticulate, usually pointed at both ends, slightly hairy below (2–4 inches long). Mock Orange or Syringa — Philadelphus coronàrius. This includes varieties with yellow foliage, Golden Syringa (306) — aùreus; white-edged foliage — argénteo-marginàta; narrow leaves — salicifòlia; dwarf form — nànus; and several double-flowered forms.

A. Flowers pure white, slightly fragrant, 1½ inches broad, usually 5 in cluster, style longer than stamens; spreading, with branches arching; a hybrid. Zeyher's Syringa — Philadelphus Zéyheri.

A. Flowers as in the last, but with the petals oblong, acute; leaves longer and more pointed. Falconer's Syringa (307) — Philadelphus Fàlconeri.

A. Flowers small, yellowish-white, very fragrant, 3–7 in cluster completely covering the plant; leaves ¾–2½ inches long; a hybrid with several varieties. Lemoine's Syringa — Philadelphus Lemóinei.

A. Flowers large on leafy branchlets with few, 1–3, rarely 5 together, slight but delightful fragrance, calyx lobes twice as long as tube. Large shrub with recurved branches. Large-flowered Syringa (308) — Philadelphus grandiflòrus.

A. Flowers as in the last but a little smaller, scentless; calyx lobes only as long as tube. A vigorous shrub of drooping habit. Odorless Syringa — Philadelphus inodòrus.

A. Flowers on short branchlets with 1–3 creamy-white flowers; leaves hairy beneath, 1–2½ inches long. Hairy Syringa (309) — Philadelphus hirsùtus.

A. Flowers nearly solitary, 1 inch broad, very fragrant; leaves entire (½–1 inch long). Small-leaved Syringa — Philadélphus microphýllus.

* Bark of old branches not peeling off; flowers in simple racemes. (**B.**)

B. Calyx hairy outside; bark gray; tall, to 20 feet; racemes 5–11-flowered, flowers 1½–2 inches broad, creamy-white, about scentless. Broad-leaved Syringa (310) — Philadelphus pubéscens.

B. Calyx smooth outside; bark brown or grayish brown; flowers 5–9 in clusters. (**C.**)

C. Flowers pure white, scentless (1½–1¾ inches broad). Gordon's Syringa (311) — Philadelphus Gordoniànus.

C. Flowers smaller, about 1 inch, scentless; bark with numerous horizontal cracks. Lewis' Syringa — Philadelphus Léwisi.

C. Flowers 1 inch, slightly fragrant; bark with whitish longitudinal cracks. Satsuma Syringa — Philadelphus satsùmi.

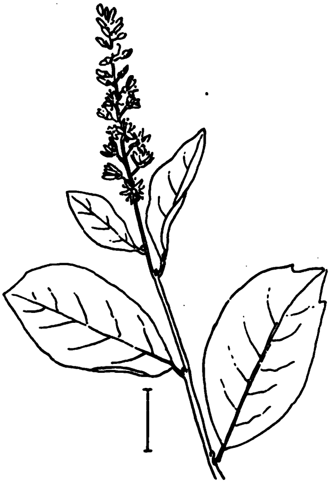


Fig. 312. — Itea.

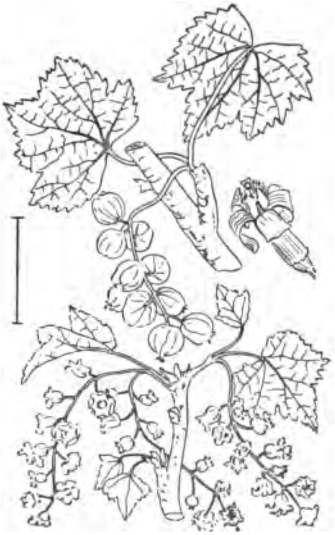


Fig. 313. — Golden Currant.

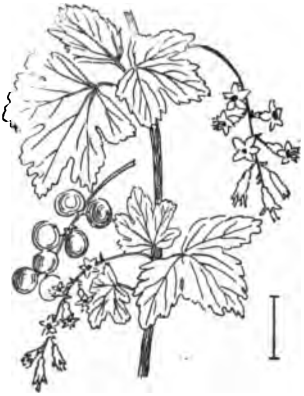


FIG. 314. — Wild Black Currant.

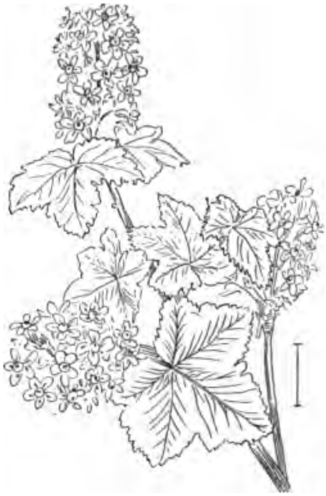


FIG. 315. — Red-flowered Currant.

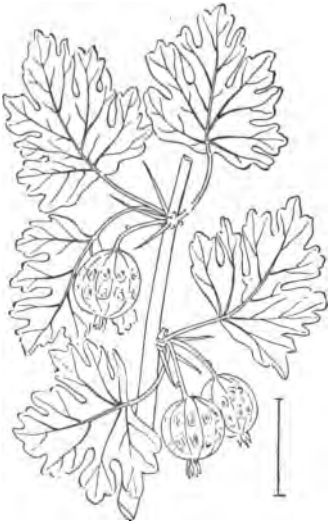


FIG. 316. — Garden Gooseberry.

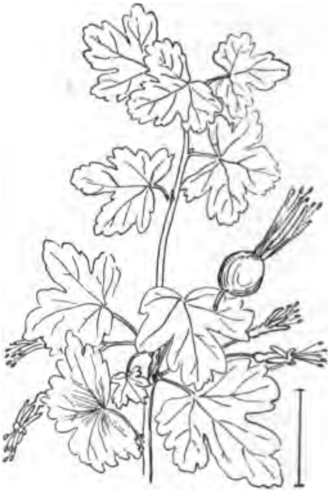


FIG. 317. Eastern Wild Gooseberry.

Ìtea virginica. ITEA (312) or VIRGINIAN 'WILLOW' is a shrub (2–4 feet high) of upright slender growth with willow-like minutely serrate alternate leaves and slender terminal clusters of small, white, fragrant flowers, in June and July. The fruit is a slender two-grooved capsule, with many seeds. Its flowers in summer and its brilliant red foliage in autumn render this rather coarse wild plant worthy of cultivation.

[Seeds; twig cuttings; divisions.]

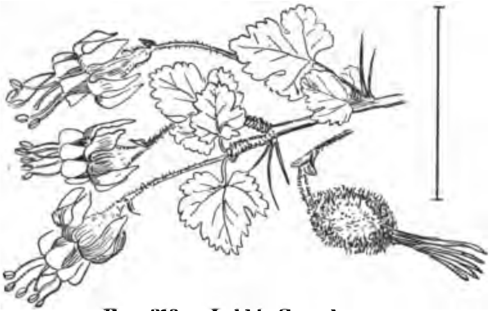


FIG. 318.— Lobb's Gooseberry.

Rìbes. The GOOSEBERRIES and CURRANTS are popular shrubs generally cultivated for their useful small fruits, but the beautiful lobed leaves, bright flowers, and colored berries of some of the species render them worthy of cultivation in the shrubbery.

The alternate (often clustered) lobed simple leaves and the globular (prickly, hairy, or smooth) fleshy berries tipped with the remains of the calyx characterize the group. The genus is easily separated into the prickly-stemmed gooseberries and the smooth-stemmed currants.

[Twig cuttings; layers; seeds.]

KEY TO THE ORNAMENTAL GOOSEBERRIES AND CURRANTS

* Stems thorny or prickly, often with both thorns and prickles — gooseberries. (**A.**)

- **A.** Thorns usually in 3's. (**B.**)
  - **B.** Flowers showy, drooping, with the stamens long, exserted. (**C.**)
    - **C.** Flowers bright red, 4-parted; calyx not reflexed; berry small, prickly, dry, few-seeded; leaves thick, shining, nearly evergreen. The most beautiful of the genus, but not hardy North. FUCHSIA-FLOWERED GOOSEBERRY — Ribes speciòsum.
    - **C.** Flowers purple and white, 5-parted; calyx reflexed; berry ($\frac{1}{2}$ inch) very glandular-hairy; leaves small, rarely 1 inch wide. LOBB'S GOOSEBERRY (318) — Ribes Lóbbii.
  - **B.** Flowers not showy, short, with calyx reflexed and stamens but

slightly exserted; fruit large, to 1 inch, green, yellowish, or red; cultivated for the edible fruit. Garden or European Gooseberry (316) — Ribes Grossulària.

A. Thorns usually single and short; flowers 1–3 in cluster, greenish or purplish; berry small, ¼ inch, smooth, reddish purple, edible; leaves usually tapering at base. Eastern Wild Gooseberry or Round-leaved Gooseberry (317) — Ribes rotundifòlium.

* Stems without prickles; flowers and fruit usually in hanging clusters. Currants. (**D.**)

D. Leaves with waxy beads or drops on the lower surface, at least when young; fruit usually dark brown to black (rarely red). (**E.**)

E. Flowers golden-yellow and spicy-scented, in short, few-flowered clusters, with large leaf-like bracts; fruit dark brown. Golden or Buffalo Currant (313) — Ribes aùreum.

E. Flowers greenish white, in 5–10-flowered drooping racemes, ovary pubescent; fruit black, mawkish; stems upright. Garden or European Black Currant — Ribes nìgrum.

E. Similar to the last, but more spreading and the stems somewhat angular; ovary smooth. Wild Black Currant (314) — Ribes flóridum (R. americànum).

D. Leaves without waxy dots on the under side. (**F.**)

F. Flowers rose-red, in large, hanging clusters without bracts; branches red and smooth; fruit rough, bluish black, dry and bitterish. Red-flowered Currant (315) — Ribes sanguíneum.

F. Flowers pink, in large clusters; almost no fruit. Pink-flowered Currant — Ribes Gordoniànum.

F. Flowers greenish white or greenish purple in erect racemes; fruit red, covered with rough glandular hairs, fetid; stems trailing and rooting. Skunk or Fetid Currant — Ribes prostràtum.

Hamamèlis. Witch Hazel (319) — Hamamelis virginiàna — is an interesting shrub or small tree, to 25 feet, with thick, oblique wavy-edged, alternate leaves, 4 to 6 inches long. It has long-petaled yellow flowers at any time from August to December. The two-celled, two-seeded, woody capsules are on the shrub through the year, and are especially peculiar in the method and vigor of seed-shooting, which occurs about the time of new bloom.

There is a Japan Witch Hazel (320) — Hamamelis japónica — with smaller leaves, 2 to 5 inches long, more prominently veined beneath. In this species the flowers bloom in the spring, February to April, and the fruit has less covering of calyx. The American species has the calyx one half the length of the fruit, while the Japan species has the calyx only at the base.

[Seeds (two years to grow); layers (slow to root).]

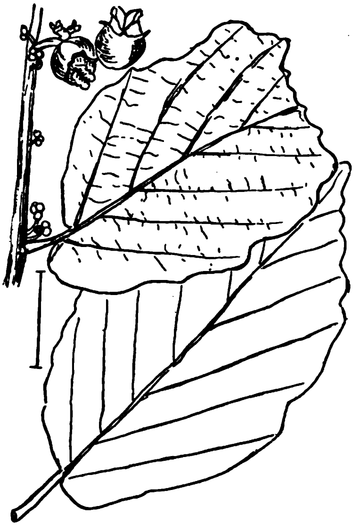


FIG. 319. — Witch Hazel.

Fothergilla. FOTHERGILLA (321) or DWARF 'ALDER' — Fothergilla Gardèni (F. carolina) — is a shrub, 2 to 5 feet high, with the twigs densely covered with star-shaped hairs. The thick alternate simple leaves are usually oblique at base, with coarse irregular notches at tip. The flowers are sweet-scented in close clusters, in April, and appear

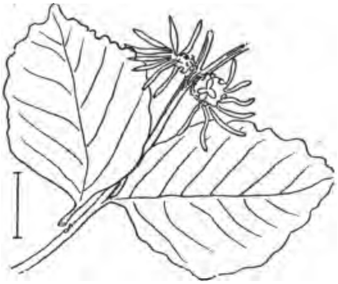


FIG. 320. — Japan Witch Hazel.

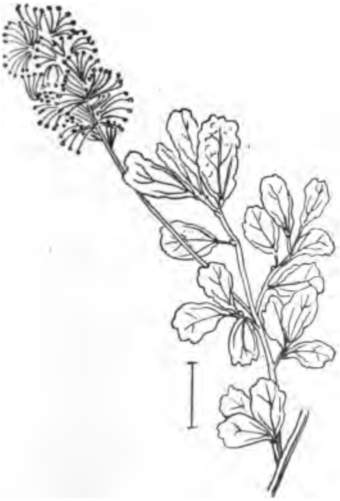


FIG. 321. — Fothergilla.

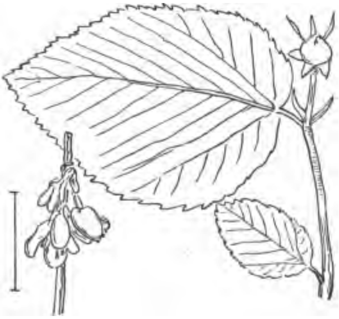


FIG. 322. — Few-flowered Corylopsis.

like a mass of white or pinkish stamens, a quarter inch long. The fruit is a hard, two-seeded seed vessel, or capsule, half an inch long.

[Seeds (2 years to grow); layers (2 years to root).]

Corylópsis. Low shrubs with alternate oblique deciduous notched leaves of a peculiar bluish green color. Flowers yellow, fragrant, in nodding clusters before the leaves expand, in early spring. Hardy from New York south and very attractive when in bloom. There are two species in cultivation from Japan, neither growing over 4 feet high. Fruit a two-celled capsule with two shining black seeds.

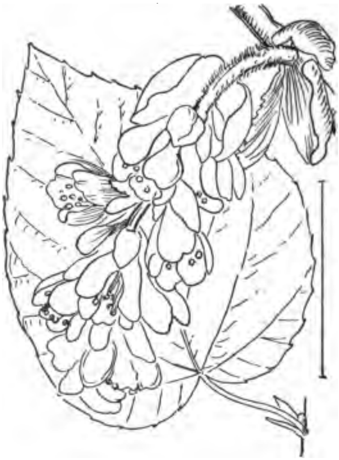


FIG. 323. — Spiked Corylopsis.

[Seeds, in spring; twig cuttings.]

- * Clusters numerous, less than 1 inch long of 2–3 flowers; leaves obliquely heart-shaped (1–2 inches long). FEW-FLOWERED CORYLOPSIS (322) — Corylopsis paucifl**ò**ra.
- * Clusters 1–2 inches long of 7–10 bright yellow flowers; leaves 2–3½ inches long. SPIKED CORYLOPSIS (323) — Corylopsis spicàta.

Mýrtus commùnis. The CLASSIC MYRTLE (324) is a handsome evergreen outdoor shrub in the South, 3 to 10 feet high, with opposite simple feather-veined entire-edged aromatic shining leaves. The flowers are 5-petaled, solitary, axillary, white or pinkish (sometimes double), in July. The stamens are numerous, in several rows; the fruit are black berries with

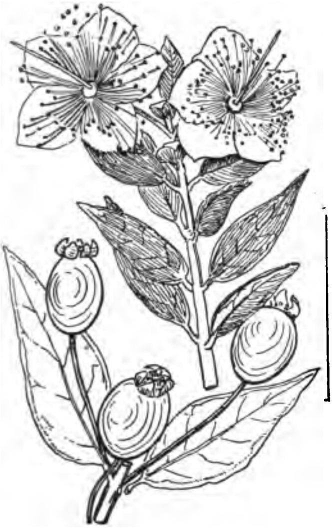


Fig. 324. — Classic Myrtle.

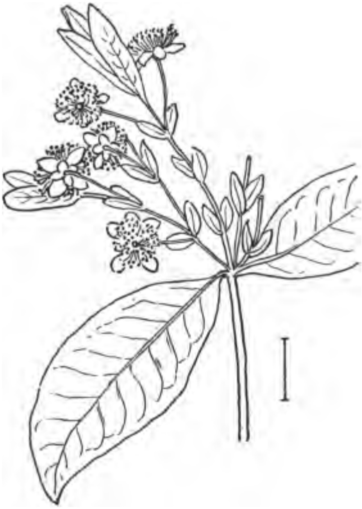


Fig. 325. — Grumichama.

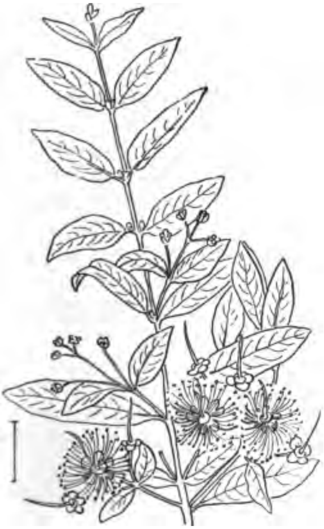


Fig. 326. — Brush 'Cherry.'

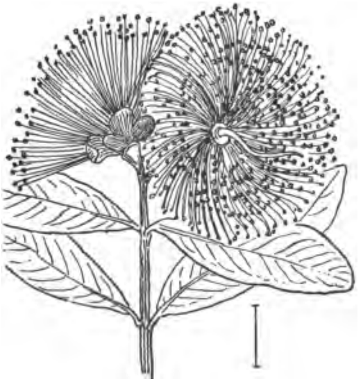


Fig. 327. — Jambos.

several kidney-shaped seeds. A number of varieties are in cultivation differing in the size, shape, and coloring of the leaves. In southern California this is ever blooming. Besides this European species there are two others in cultivation in southern California, from Chili.

[Twig cuttings.]

Eugènia. The Eugenias are myrtle-like Southern shrubs or trees with opposite evergreen finely feather-veined aromatic leaves, white or creamy flowers, and usually one-seeded cherry-like edible berries. They are cultivated, mainly, for their showy fruits, some of them excellent for jellies.

[Twig cuttings.]

KEY TO THE SPECIES OF EUGENIA

* Flowers and fruit solitary, axillary. (**A.**)

A. Tall to 20 feet; berry cherry-like, ribbed (1 inch broad), red with an acid spicy flavor, ripe May and June. Southern Florida and California. Cayenne 'Cherry' — Eugenia Míchelii.

A. Shrub to 6 feet with scale-like leaves 3 inches long covering the branches; fruit scarlet, cherry-like, in April. Grumichama (325) — Eugenia brasiliénsis.

* Flowers and fruit in 3–9-flowered clusters. (**B.**)

B. Smooth shrub to 12 feet with dark and glossy leaves (2–3 inches long); red to violet fruit (¾ inch) ending in a persistent calyx. The fine veins of the leaves are nearly at right angles to the midrib. Brush 'Cherry' (326) — Eugenia myrtifòlia.

B. A tree to 30 feet with thick slender leaves, like the oleander, and fruit (1½–2 inches broad) light-colored with a pink cheek, apricot-flavored. Rose 'Apple.' Jambos (327) — Eugenia Jámbos.

B. A tall shrub or small tree with broad blunt leaves (4–6 inches long and 2–3 inches broad); berry the size of a cherry or sometimes larger; the flowers in this species have the petals united at base. Jambolan 'Plum' — Eugenia Jambolàna.

Psídium. The Guavas are evergreen shrubs or small trees of the extreme South. The leaves are simple, opposite, thick, usually entire-edged and feather-veined. The flowers are large, 1 to 2 inches, 5-petaled with many stamens, solitary or few in the axils of the leaves. The fruit is a large somewhat rough yellow or yellowish many-seeded berry used in the tropics for jelly or in tarts and also eaten raw.

[Suckers; twig cuttings; seeds.]

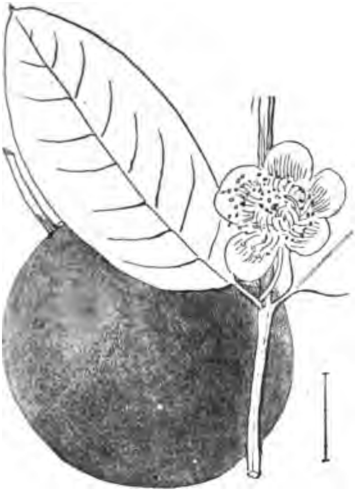


Fig. 328. — Lemon Guava.

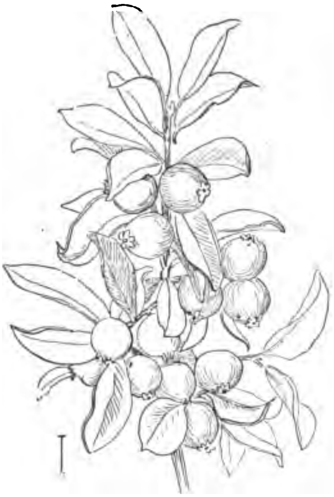


Fig. 329. — Strawberry Guava.

KEY TO THE SPECIES OF PSIDIUM

* Branchlets more or less square. Shrub or tree 6–15 feet with the 1-many (usually 3) short-stemmed flowers in the axils of the leaves, June; fruit 2–3 inches broad, globular, yellow, aromatic and astringent, July–Nov. Lemon Guava (328) — **Psidium Guajàva.**

* Branchlets round. (**A.**)

A. Shrub 4–6 feet with hairy twigs, velvety leaves, and ovoid greenish yellow fruit with white flesh. Brazil Guava — **Psidium Aràca.**

A. Shrub 8–10 feet with hairy twigs but the leaves smooth above; fruit nearly round, deep yellow outside, with red flesh of delicious flavor. Guiana Guava — **Psidium guineénse.**

A. Shrub 10–20 feet with smooth twigs and thick smooth dark green leaves; fruit round (about 1 inch), deep claret color and rough fig-like surface, a strawberry-like fragrance and flavor. Strawberry Guava (329) — **Psidium Cattleiànum.**

Callistèmon. The Bottle-brushes form a group of ornamental Australian shrubs with simple alternate entire-edged evergreen leaves. These, like a number of other Australian plants, have the blades of the leaves broadened up and down, parallel with the stems, instead of crosswise as in most plants. Such leaves cast but little or no shade. Many of the Acàcias, p. 132, illustrate this kind of foliage. Hardy only in southern California and Florida but cultivated in greenhouses North. The flowers are in spikes, at the start, at the end of the branches with long conspicuous stamens; after flowering, the tips of the clusters grow into shoots and the fruit, many-seeded small capsules, remaining on for years, mark the annual growth of the stems. [Twig cuttings; seeds.]

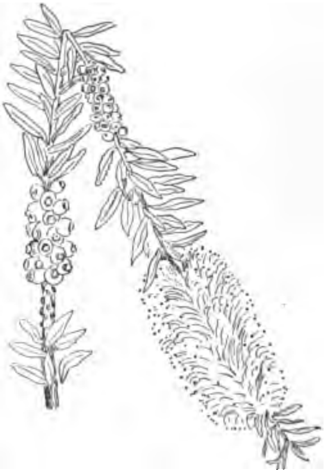


Fig. 330. — Showy Bottle-brush.

KEY TO THE SPECIES OF CALLISTEMON

* Leaves flat and feather-veined. (**A.**)

  A. To 10 feet; with scarlet flowers having calyx and corolla hairy, forming large dense spikes; leaves lance-shaped, hairy when young. Showy Bottle-brush (330) — Callistemon speciòsus.

  A. To 6 feet; with loose clusters of reddish flowers; leaves more crowded, reddish when young. Lance-leaved Bottle-brush — Callistemon lanceolàtus.

  A. To 4 feet; with rigid linear leaves almost spine-tipped and dense spikes of red flowers with especially dark anthers. Rigid-leaved Bottle-brush — Callistemon rígidus.

* Leaves linear and almost without veins except the midrib. 4–6 feet with scarlet flowers and more globular fruit. Slender-leaved Bottle-brush — Callistemon lineàris.

Púnica. POMEGRANATE (331) — Punica Granàtum — is a large handsome deciduous shrub or small tree, to 15 feet, with showy scarlet flowers, hardy as far north as Washington. The leaves are mostly opposite, oblong, entire-edged, smooth and shining. The flowers (1 inch broad) are nearly solitary, axillary, in summer. The fruit is a large, 2 to 4 inches broad, many-seeded edible berry, ripe in September and can be kept for several weeks ; there are both sour and sweet varieties. DWARF POMEGRANATE — Punica Granàtum nàna — is the best variety for ornamental cultivation, as it grows to the height of only 6 feet and has both single- and double-flowered forms. As a conservatory plant it blooms throughout the year. [Twig cuttings under glass.]

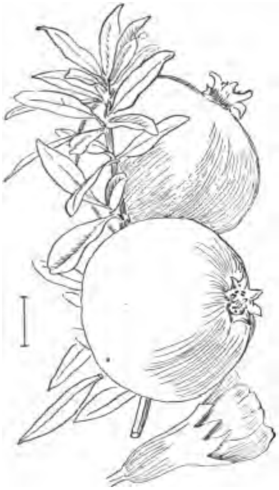


FIG. 331. — Pomegranate.

Lagerstrœmia índica. CRAPE 'MYRTLE' (332) is one of the most beautiful and popular of large shrubs or small trees, 10 to 25 feet, in cultivation. It is hardy with slight protection north to Philadelphia. In the South it is to be found in nearly all private grounds. The beauty of the plant is due to the large clusters of flowers with their wavy (crinkled or fringed) stalked petals, in summer ; it blooms continuously for two or three months. The usual color of the flowers is bright pink, but there are varieties ranging from white to purple. The fruit is a 3- to 6-celled capsule with winged seeds. The rather small (2 inches) leaves are generally opposite ; near the tips of the branches they become alternate, oblong, with entire margins. [Twig cuttings.]

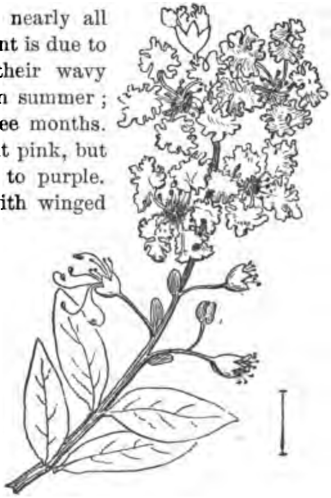


FIG. 332. — Crape 'Myrtle.'

Opúntia. The CACTUS plants hardly come within the scope of this book, but there are forms which are woody and hardy enough to endure the winters in the New England states, and some in the southern states

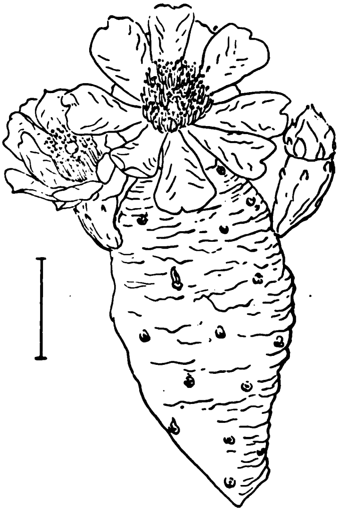


FIG. 333. — Eastern Prickly Pear.

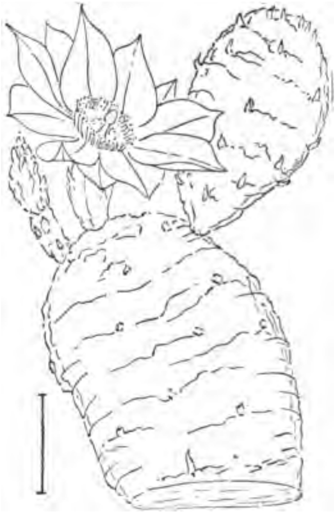


FIG. 334. — Western Prickly Pear.

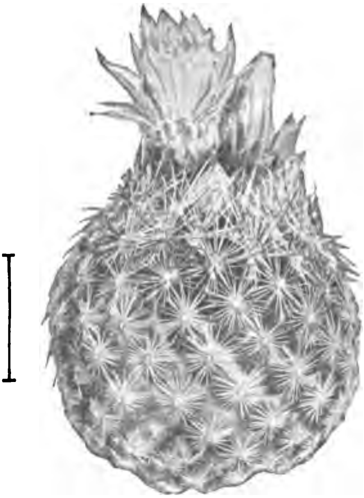


FIG. 335. — Purple Cactus.

which are trees in size and plan of branching, so a few words will be given to them. They can all be readily recognized by their fleshy spine-covered growth without foliage leaves. The most abundant and hardy group is the Prickly 'Pear,' with flat jointed branching stems and large, generally yellow, flowers followed by usually edible pulpy pear-like fruit with many shining seeds. The largest and most tree-like is wild in the region of the Rocky Mountains, TREE-LIKE PRICKLY 'PEAR' — Opuntia arboréscens. EASTERN PRICKLY 'PEAR' (333) — Opuntia vulgàris — is found from Massachusetts and south. There are several species found in the Mississippi Valley, Western Prickly 'Pear' (334) — Opuntia Rafinésquii — etc.

Mamillària. The next group of cacti in number and variety of forms wild in the United States are more or less rounded or oblong masses having the surface entirely covered with spiny-tipped tubercles (mammillæ); as, Purple Cactus (335) — Mamillaria vivípara. Of this group there are a dozen wild and many cultivated species. The hundreds of species in cultivation belong to these two and some dozen other genera.

There is a group very popular in cultivation which has broad flat leaf-like growths for stems, thus called Leaf Cactus — Phyllocáctus. A few of these are night-blooming of great beauty and delicious perfume. Though some of these are wild in Cuba, probably none can be grown out of doors except in southern California.

[Cuttings.]

Aràlia. The Aralias proper form a large group (40 species) of mainly tropic plants with compound leaves and clustered small flowers; two of the species are shrubs or small trees nearly hardy North.

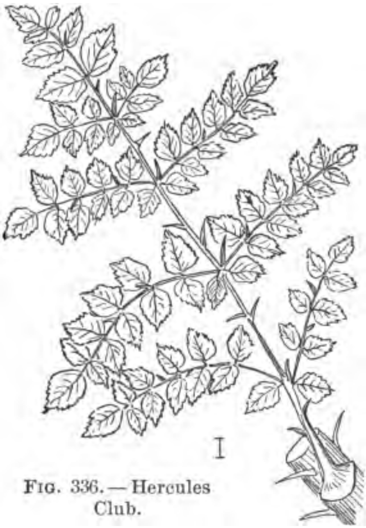


Fig. 336. — Hercules Club.

Hercules' Club or Devil's Walking-stick, and Angelica-tree are beautiful prickly shrubs or small trees with very large compound leaves 1 to 4 feet long, with 75 to 200 blades and enormous clusters of white flowers, in August. The two species are the American Hercules Club (336) — Aralia spinòsa, — and the Chinese Angelica-tree — Aralia chinénsis, — either of which occasionally grows to the height of 40 feet. The American is apt to be the more prickly, on both stem and leaves. The blades of the bipinnate leaf of the American are usually smaller, 1½ to 3½ inches long, and short-stalked, while the Chinese blades are larger, 3½ to 6 inches long, and about stemless. Neither are fully hardy North without some protection, but the Chinese is the more hardy. In the American species the veins peculiarly curve near the margins, while those of the Chinese divide. There is a form of the latter with variegated leaves. No shrubs in the northern states have such a palm-like tropic appearance as the Aralias, and they should be more extensively cultivated. [Twig cuttings; root cuttings.]

Acanthopànax. This is a closely related genus of prickly shrubs or trees, often called Aralias in catalogues, a few of which are in cultivation. FIVE-BLADED ARALIA or ANGELICA — Acanthopanax pentaphýllum (Aràlia pentaphýlla) — is a graceful spiny shrub (5 to 10 feet) with deciduous glossy leaves of 5 to 7 wedge-lance-shaped notched blades (1 to 2 inches long) and small green flowers. The fruit is a 2- to 5-seeded black berry. With white-edged leaves, this forms var. variegàtum.

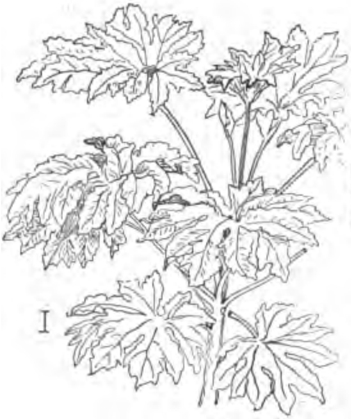


FIG. 337. — Formosa Rice-paper Aralia.

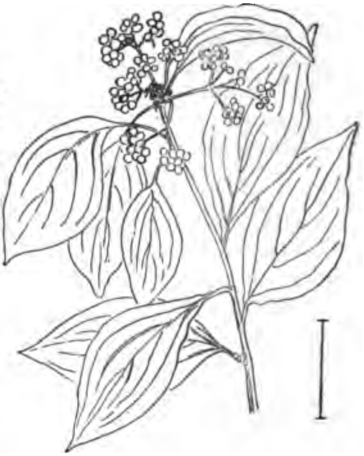


FIG. 338. — Alternate-leaved Dogwood.

SESSILE-FLOWERED ARALIA — Acanthopanax sessiflòrum — is a larger, to 12 feet, and less shining shrub with usually 3 larger blades, 4 to 7 inches, to the leaves and dull purplish flowers. The heads of black berries are conspicuous and beautiful. There is a species of the genus with large simple 5- to 7-lobed leaves and many stout prickles on the branches, but it is a medium-sized tree, to 80 feet, Acanthopanax ricinifòlium. [Seeds; root cuttings; twig cuttings.]

Fátsia. The RICE-PAPER ARALIAS of Japan are without thorns but with very large pith in the stems, from which the paper is made. In the shade and somewhat protected, they are hardy north to Washington and have a peculiar and beautiful appearance. The leaves are large, 1 foot,

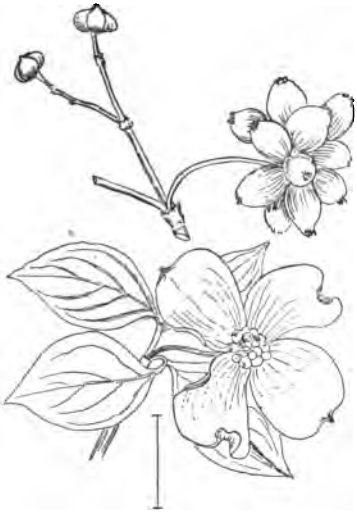


Fig. 339. — Flowering Dogwood.

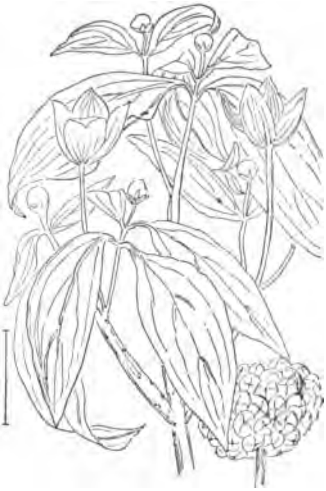


Fig. 340. — Evergreen Dogwood.

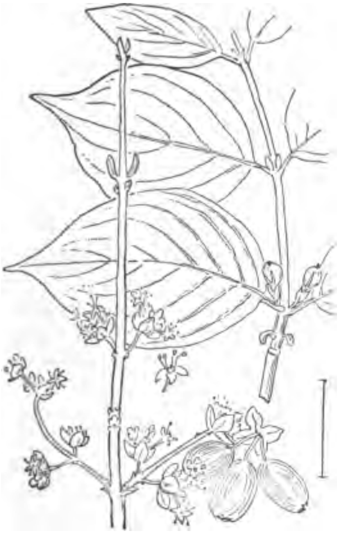


Fig. 341. — Cornelian 'Cherry.'

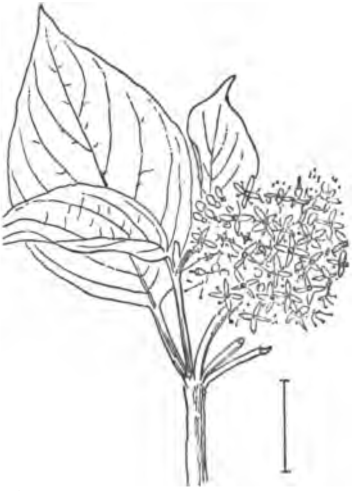


Fig. 342. — Red-osier Dogwood.

simple, heart-shaped at base with 5 to 7 notched lobes. The species from Formosa, Formosa Rice-paper Aralia (337) — Fatsia papyrífera, — has the white flowers sessile in globular clusters, while the one from Japan, Japan Rice-paper Aralia — Fatsia japónica, — has more shining foliage and the flowers in umbels. There are variegated forms of both species. [Root cuttings.]

Córnus. The Dogwoods form an interesting group of shrubs and small trees* (a few are herbaceous) with peculiarly veined entire-edged leaves. The side-veins are distinctly parallel with each other and incurving towards the acute tip of the leaf. There are but few other plants with leaves so veined; some of the Buckthorns (p. 93) come nearest among our shrubs. All our species of Cornus except one, Alternate-leaved Dogwood (338) — Cornus alternifólia, — have opposite leaves. A few species in cultivation have what is apparently large white or pink flowers of great beauty. The colored part, in these cases, is really four large bracts surrounding the clusters of small flowers in a head-like growth. The finest and commonest of these is our Flowering Dogwood (339) — Cornus flòrida, — a shrub or small tree (10–15 feet, rarely to 40 feet) with spreading branches, white or pink flowers in May and

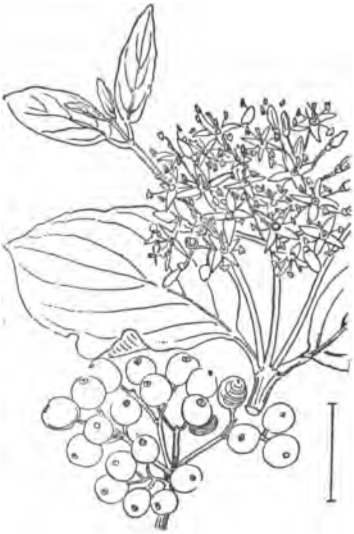


Fig. 343. — White-fruited Dogwood.

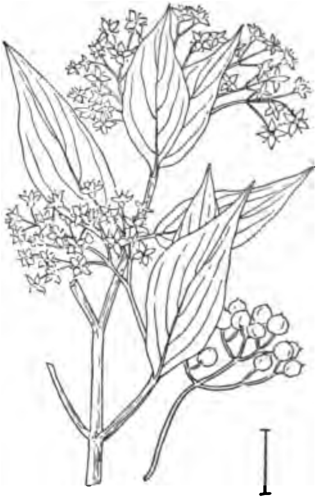


Fig. 344. — Panicled Dogwood.

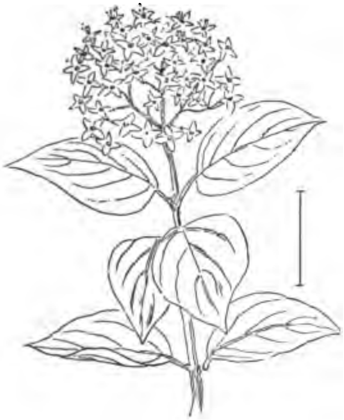


FIG. 345 — Bailey's Dogwood.

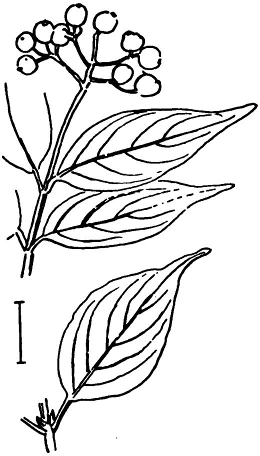


FIG. 346. — Stiff Dogwood.

clusters of scarlet berries in fall. The bracts, or large petal-like parts, have notched tips. JAPAN DOGWOOD — Cornus Koùsa — grows somewhat taller, has narrower leaves, pointed creamy bracts to the flowers in June

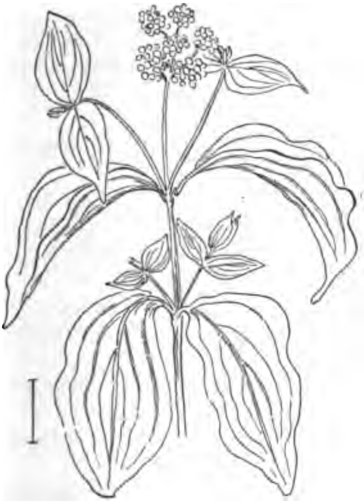


FIG. 347. — Silky Dogwood.

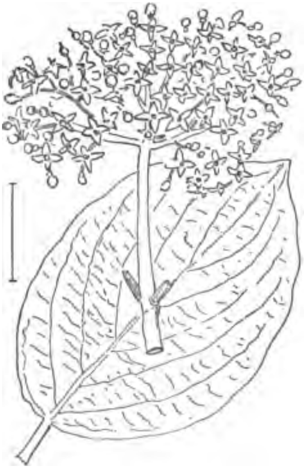


FIG. 348. — European Dogwood.

and the berries grow together in a globular head. The American species blooms before the leaves are fully expanded, while the flowers of the Japan species appear after the leaves. Both are hardy to Massachusetts.

All the other shrubby forms have the clusters of flowers more open and without large conspicuous bracts. The true flowers of all the species are small and have four petals to the corolla, four teeth to the calyx, and four stamens. The fruit is a drupe-like berry with one stone in the center and thin flesh. Much of the beauty of the species is due to the bright-colored berries which they bear, though the autumn coloring of the foliage adds to the attractiveness of the group. The bright colors of the twigs of some species, when the leaves have dropped, give winter effects of great beauty.

In general, the common name Cornel, below, may be changed to Dogwood. [Twig cuttings; layers.]

KEY TO THE CORNELS AND DOGWOODS

* Flowers in close heads surrounded by 4 large petal-like bracts. (**A.**)

A. Berries separated when ripe. (**B.**)

B. Bracts notched at tip; usually a shrub 10–15 feet, occasionally a tree. Flowering Dogwood (339) — Cornus flórida.

B. Bracts generally acute at tip. Successfully cultivated only near the Pacific; tree to 80 feet. Nuttall's Dogwood — Cornus Núttallii.

A. Berries grown together in fleshy head. (**C.**)

C. Leaves deciduous; shrub to 20 feet. Japan Dogwood — Cornus Koùsa.

C. Leaves thick, leathery, evergreen; hardy only South. Evergreen Dogwood (340) — Cornus capitàta.

* Flowers yellow in umbels surrounded at base with small bracts; berries bright scarlet. (**D.**)

D. Leaves with fine close-pressed hairs, green both sides. The earliest yellow-flowering shrub. Cornelian 'Cherry' (341) — Cornus Más.

D. Leaves paler beneath and with large tufts of dark brown hairs. Chinese Cornelian 'Cherry' — Cornus officinàlis.

* Flowers white or greenish white in open clusters and without bracts. (**E.**)

E. Leaves alternate, pale or whitish beneath, 3–5 inches long; branches peculiarly arranged in horizontal tiers. (**F.**)

- **F.** Berries dark blue on red stems; shrub to 25 feet; flower-clusters 1-2½ inches broad. ALTERNATE-LEAVED CORNEL (338) — Cornus alternifòlia.
- **F.** Berries blue-black; hardy only South, tree to 60 feet; flower-cluster 3-4 inches broad. JAPAN CORNEL — Cornus macrophýlla.

E. Leaves opposite; flowers in broad, umbel-like compound clusters, cymes. (**G.**)

- **G.** Fruit white or nearly so (bluish or greenish white in some species). (**H.**)
  - **H.** Leaves nearly smooth beneath but whitish with straight close-pressed hairs. (**I.**)
    - **I.** Branches blood-red or bright yellow, in either case there are varieties with variegated foliage. (**J.**)
      - **J.** Main stem prostrate and rooting; shrub to 8 feet, broad, bush-like; stone of fruit wider than high. RED-OSIER DOGWOOD (342) — Cornus stolonífera.
      - **J.** Shrub to 10 feet with erect stems; stone of the fruit longer than wide and flattened; white berries ripe in July. RED-STEMMED DOGWOOD or WHITE-FRUITED DOGWOOD (343) — Cornus álba.
    - **I.** Branches gray; fruit white on red stems in more elongated clusters, ripe in Aug. and remaining till Jan. Shrub 6-15 feet beautiful in bloom and fruit. PANICLED CORNEL (344) — Cornus candidíssima (C. paniculàta).
  - **H.** Leaves downy-hairy below. (**K.**)
    - **K.** Branches dark red; leaves narrow. Erect-growing; excellent for sandy soil, blooming nearly all summer. BAILEY'S DOGWOOD (345) — Cornus Bàileyi.
    - **K.** Young branches green with purple blotches; leaves broad; berries bluish or greenish with red stems. ROUND-LEAVED CORNEL or DOGWOOD — Cornus circinàta.
- **G.** Fruit blue or black. (**L.**)
  - **L.** Fruit pale blue with globular, nearly smooth stone; leaves greenish both sides; branches reddish; shrub to 15 feet, not fully hardy North. STIFF CORNEL (346) — Cornus strícta.
  - **L.** Fruit light blue with oblique-ridged stone; branches purple and usually hairy, especially when young; shrub 3-10 feet. SILKY CORNEL or KINNIKINNIK (347) — Cornus Amòmum.
  - **L.** Fruit black; flowers greenish-white; branches purple or blood-red; shrub to 12 feet. EUROPEAN CORNEL or RED-OSIER (348) — Cornus sanguínea.

Aucùba japónica. AUCUBA OR JAPANESE 'LAUREL' (349) is an evergreen shrub, with large opposite thick notched glossy and often variegated leaves, cultivated in the Gulf states (where it is hardy) for the foliage and bright one-seeded berries which are red, white, or yellow in the different varieties. The flowers are small and inconspicuous, in clus-

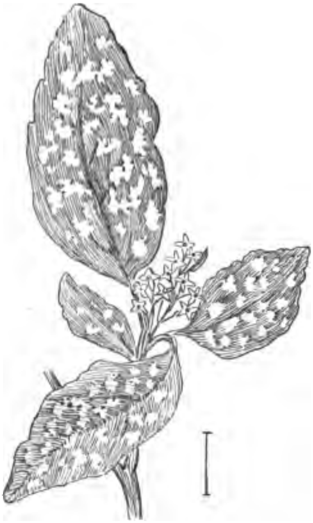


FIG. 349. — Aucuba.

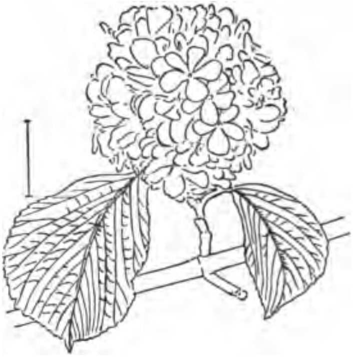


FIG. 350. — Japanese Snowball.

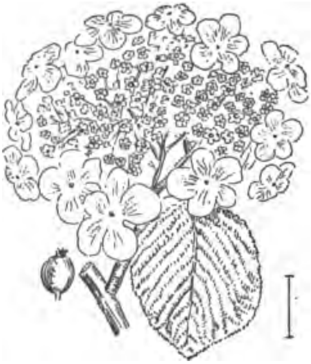


FIG. 351. — Hobble-bush.

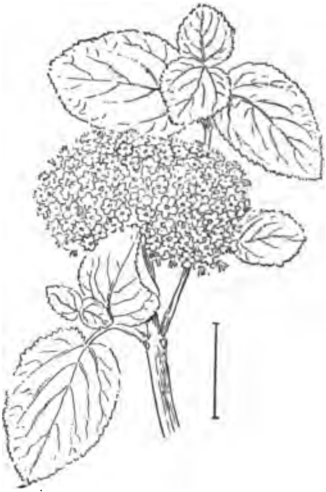


FIG. 352. — European Wayfaring Tree.

ters. As the plants are diœcious, only a portion, those with pistils, bear the fruit. There are handsome variegated forms with white or yellow stripes, dots, and blotches to the leaves, arranged in many patterns and giving rise to many varietal names. [Twig cuttings; seeds.]

Vibúrnum. The VIBURNUMS form a large group, 80 species, of opposite simple-leaved ornamental shrubs. A number are in cultivation and several are very beautiful in foliage, flowers, and fruit. Some have bright colored drupes which remain through the winter; they have, in most species, a decidedly flattened stone. The SNOWBALL group are like the Hydrangeas (see p. 192) in that the blossoms have become enlarged and sterile. The Hydrangeas have white, pink, purple, or bright blue flowers; while the Viburnums have only white or creamy flowers. The Viburnums bloom earlier, all being in bloom in May; while the Hydrangeas do not begin to bloom before June and some species continue blooming through July and August. So Viburnums are spring-blooming and Hydrangeas are summer-blooming. The small fertile flowers, if closely examined, will show plain differences. The Hydrangeas have 4 to 5 separate petals to the corolla, while the Viburnums have bell-shaped 5-lobed corollas. The Hydrangeas have 8 to 10 long stamens, the Viburnums 5 short ones. [Seeds; twig cuttings, under glass.]

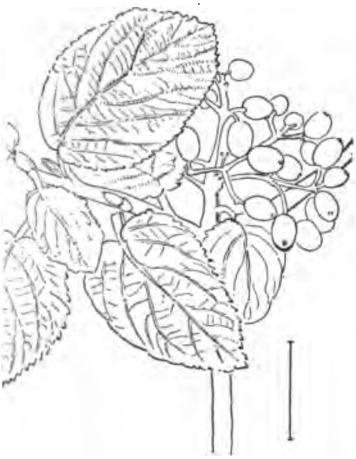


FIG. 353. — Japanese Viburnum.

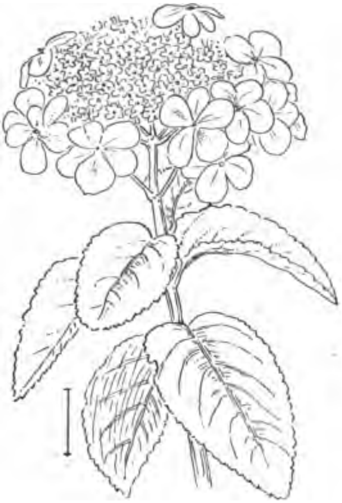


FIG. 354. — Chinese Viburnum.

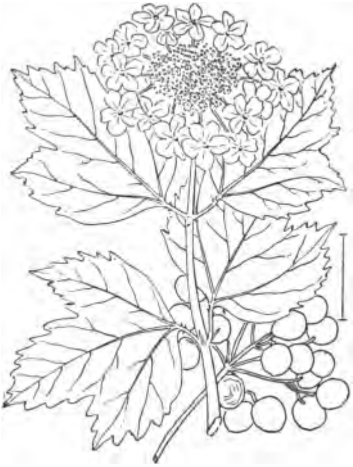


FIG. 355.—High-bush 'Cranberry.'

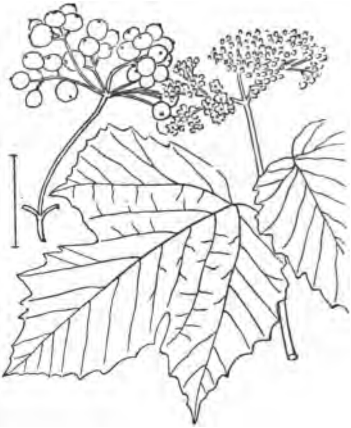


FIG. 356.—Dockmackie.

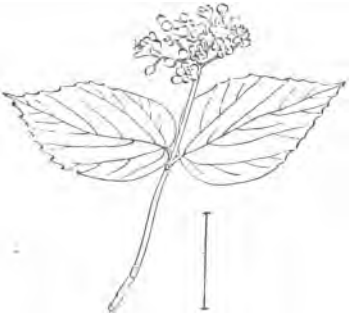


FIG. 357.—Downy Arrowwood.

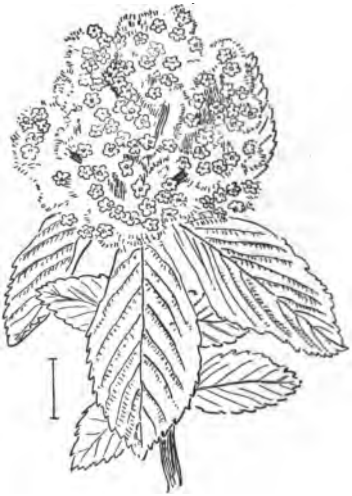


FIG. 358.—Siebold's Viburnum.

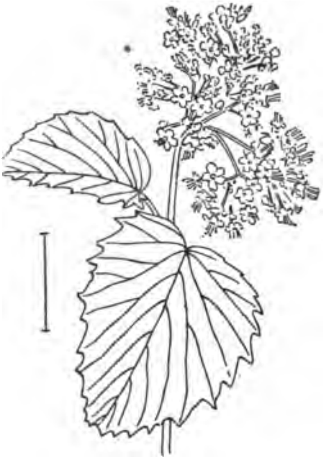


Fig. 359. — Arrowwood.

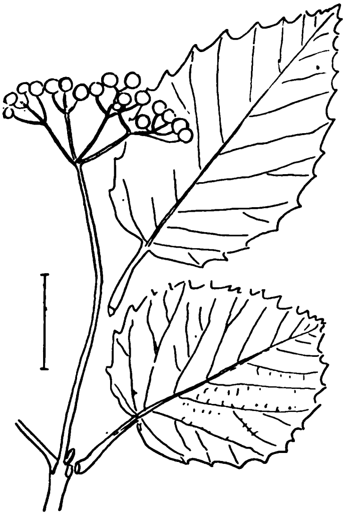


Fig. 360. — Soft-leaved Arrowwood.

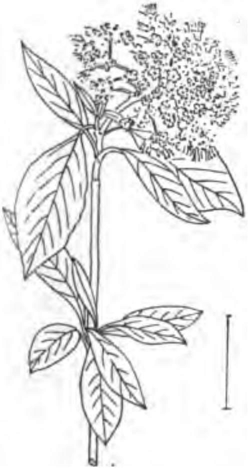


Fig. 361. — Withe-rod.

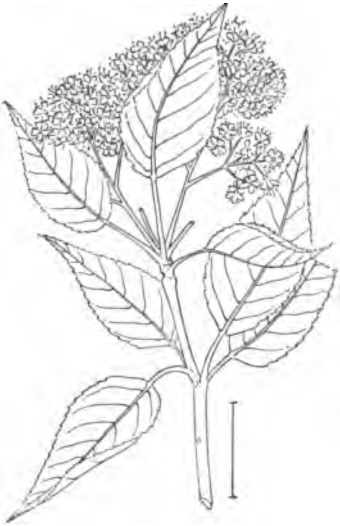


Fig. 362. — Sheep-berry.

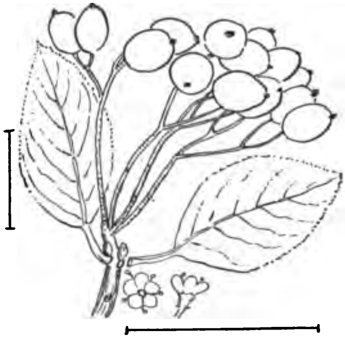


FIG. 363. — Stag-bush.

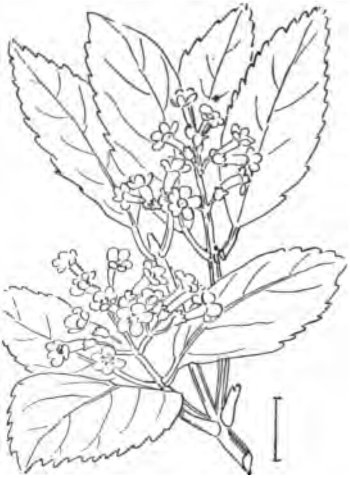


FIG. 364. — Sandankwa's Evergreen Viburnum.

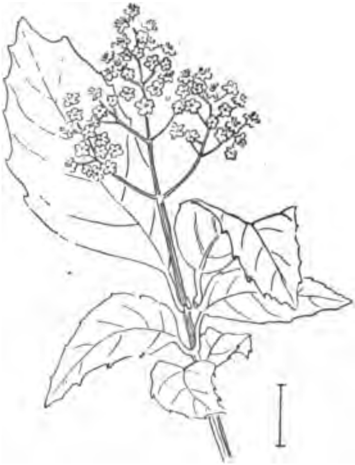


FIG. 365. — Sweet-scented Evergreen Viburnum.

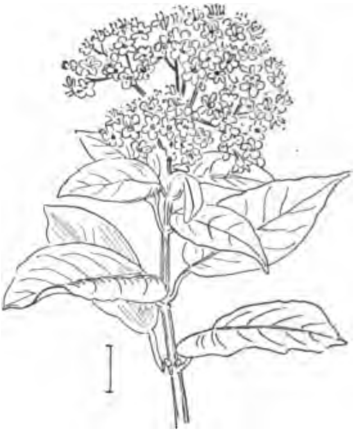


FIG. 366. — Laurestinus.

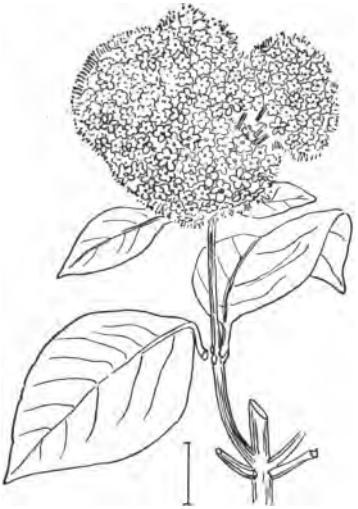


Fig. 367. — Hairy Laurestinus.

KEY TO THE SPECIES OF VIBURNUM

* Snowball group, with all the flowers enlarged and sterile and thus forming no fruit. (**A.**)

- **A.** Leaves deciduous, smooth, feather-veined with notched edges but not lobed. (**B.**)
  - **B.** Leaves finely notched, dark green above; flower-clusters 7–8 inches broad. Chinese Snowball — Viburnum macrocéphalum stérile.
  - **B.** Leaves coarsely notched and plaited; flower-clusters 3 inches broad. Japanese Snowball (350) — Viburnum tomentòsum plicàtum.
- **A.** Leaves radiate-veined and broadly 3-lobed. Snowball or Guelder 'Rose' — Viburnum Ópulus stérile.

* Mixed group; some of the flowers fruit-producing but the marginal ones enlarged and sterile; leaves deciduous. (**C.**)

- **C.** Leaves without lobes; drupes red becoming darker. (**D.**)
  - **D.** Leaves orbicular, somewhat heart-shaped, 3–8 inches broad. Hobble-bush, Witch Hobble, or Moosewood (351) — Viburnum alnifòlium.

D. Leaves heart-shaped, 2–4 inches long, finely serrate. EUROPEAN WAYFARING TREE (352) — Viburnum Lantàna.

D. Leaves not heart-shaped, decidedly notched, plaited, and ridged. JAPANESE VIBURNUM (353) — Viburnum tomentòsum.

D. Leaves as in the last, but smoother above and with finer notches not plaited. CHINESE VIBURNUM (354) — Viburnum macrocéphalum.

C. Leaves 3-lobed; berries bright red. (**E.**)

E. Branches smooth and light gray; shrub to 12 feet and spreading; drupes pendulous in large clusters, in July yellow, turning scarlet later and remaining bright till Feb. PIMBINA or HIGH BUSH 'CRANBERRY' (355) — Viburnum Ópulus americanum (V. Opulus). (**G.**)

E. Branches darker and somewhat corky; shrub denser and more upright; berries upright in small clusters, less showy and less persistent; sterile flowers larger. MANCHURIAN CRANBERRY-BUSH — Viburnum Sargéntii.

* With only small drupe-bearing flowers; leaves deciduous; shrubs hardy. (**F.**)

F. Leaves 3-lobed and coarsely notched; small shrubs 2–6 feet. (**G.**)

G. Flower-clusters about 2 inches broad; drupes nearly black, persistent. Brilliant in fall. MAPLE-LEAVED VIBURNUM or DOCKMACKIE (356) — Viburnum acerifòlium.

G. Flower clusters smaller; drupes light red and larger. SQUASHBERRY or PIMBINA — Viburnum pauciflòrum.

F. Leaves not lobed. (**H.**)

H. Leaves coarsely dentate, usually decidedly less than 25 teeth on a side. (**I.**)

I. Leaves short-stemmed, under ¼ inch, velvety below; drupes almost black, late July–Dec.; flowers very abundant in early June. DOWNY ARROWWOOD (357) — Viburnum pubéscens.

I. Leaf-stem over ¼ inch long. (**J.**)

J. Leaves thick, notched beyond the middle (entire before), somewhat plaited, 3–6 inches long; flowers in large clusters, May, June; fruit oblong, red changing to black, ripe in August and soon dropping. A variety, variegàtum, with white-blotched leaves. SIEBOLD'S VIBURNUM (358) — Viburnum Siéboldi.

J. Leaves thinner and smooth below. (**K.**)

K. Flower-clusters with long stems; drupes blue changing to black and glaucous, eaten by birds and disappearing before frost. ARROWWOOD (359) — Viburnum dentàtum.

K. Flower-clusters almost sessile; drupes large, bright red in nodding clusters remaining till February. One of the most showy. Wright's Viburnum — Viburnum Wrightii.

J. Leaves thinner and hairy below with pubescence. (**L.**)

L. Drupes blue but little longer than wide; leaves dark green. Soft-leaved Arrowwood (360) — Viburnum mólle.

L. Drupes dark blue, twice as long as wide and 2-grooved, ½ inch long; leaves long-stemmed, 3½ inches broad, bright green above. Viburnum Demetriònis.

L. Drupes scarlet, small, very abundant, remaining on till April as they are not eaten by birds; clusters erect. Upright bush to 10 feet. Japan Bush 'Cranberry' — Viburnum dilatàtum.

H. Leaves finely dentate (rarely entire); drupes dark blue or black when ripe. (**M.**)

M. Flower-clusters with stems ¾ inch or more long. (**N.**)

N. Leaves 1–3 inches long, generally notched, thick and shining; shrub 3–10 feet, blooming June, July. Drupes, in elongated clusters, turn yellowish, then pink, finally blue and are especially beautiful, as all three colors can be observed on the same bush at the same time. Fall color of foliage wine-red. Appalachian Tea, Wild Raisin, or Withe-rod (361) — Viburnum cassinoìdes.

N. Leaves 3–9 inches long, nearly entire; shrub to 15 feet. Larger Withe-rod — Viburnum nùdum.

M. Flower-clusters practically without stems. (**O.**)

O. Leaves slender, pointed, leaf-stalk with broad wavy margin; drupes large, sometimes 1 inch long, nodding on red stems, ripe in September; shrub or tree to 30 feet. Sweet Viburnum, Nannyberry or Sheepberry (362) — Viburnum Lentàgo.

O. Leaves blunt-pointed. (**P.**)

P. Stone of fruit oval, flat on one side; leaves 1–3 inches long; shrub or small tree. Stag-bush (363) or Black 'Haw' — Viburnum prunifòlium.

P. Stone nearly órbicular; tree to 20 feet. Southern Black 'Haw' — Viburnum rufídulum.

P. Stone grooved on one side; shrub 2–8 feet. Small Viburnum — Viburnum obovàtum.

* Leaves evergreen; not hardy North. Often cultivated as pot plants. (**Q.**)

Q. Leaves dentate or notched towards tips. (**R**.)
  R. Flowers white, tinged with pink tube ½ inch long, in rounded clusters (1½ inches wide) June, July. Sandankwa's Evergreen Viburnum (364) — Viburnum Sandánkwa.
  R. Flowers pure white, fragrant, in large elongated clusters, 4 inches, May, June. Sweet-scented Evergreen Viburnum (365) — Viburnum odoratíssimum.
  R. Flowers in broad clusters, 2–4 inches; drupes bright red. Japan Evergreen Viburnum — Viburnum japónicum.
Q. Leaves entire. (**S**.)
  S. Flowers white or pinkish in convex clusters (2–3 inches broad), May–August. Laurestinus (366) — Viburnum Tínus.
  S. Flowers pure white in large clusters, 3–4 inches broad; leaves wrinkled (3–6 inches long). Hairy Laurestinus (367) — Viburnum rígidum.

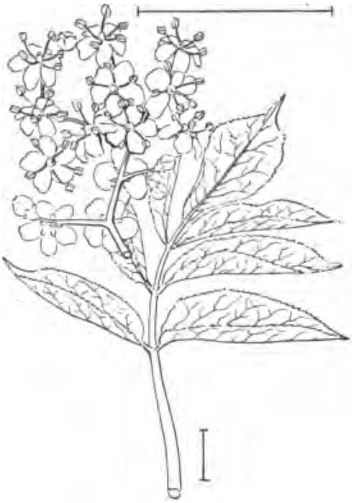


Fig. 368. — Common American Elder.

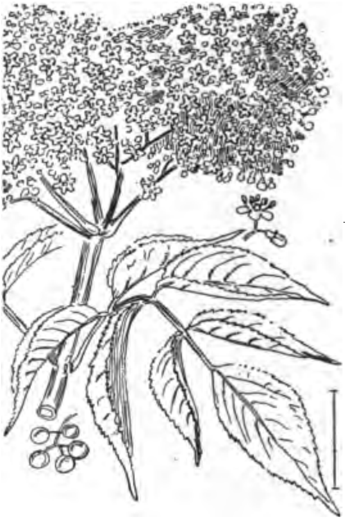


Fig. 369. — European Black Elder.

Sambùcus. The Elder bushes have recently become very popular for the shrubbery. They can be known by the opposite compound (pinnate) leaves, large clusters of small white flowers, and the black or red (rarely white or green) small berries. The small flowers have broadly spreading 3- to 5-lobed corolla and 5 stamens. The berries are about ¼ inch broad and have 3 to 5 seeds. The stalks are remarkable for their large pith.

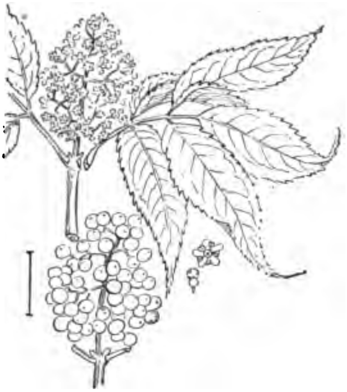


FIG. 370.—European Red-berried Elder.

KEY TO THE SPECIES OF ELDER

* Color of fruit black or nearly so. (**A.**)

A. Height 5–12 feet; stems with large very white pith filling over half the diameter; leaves with 5–11 usually smooth notched blades; flowers fragrant in broad clusters, June, July; fruit ripe Aug., Sept. COMMON AMERICAN ELDER (368) — Sambucus canadénsis.

A. Height 12–25 feet; with rough bark, less abundant pith and earlier bloom, May. EUROPEAN BLACK ELDER (369) — Sambucus nigra.

A. Height 6–18 feet; with the fruit strongly whitened with bloom and not polished as in the above species. Pacific coast species. CALIFORNIAN ELDER — Sambucus glaùca.

* Color of fruit red (rarely white). (**B.**)

B. Height 5–7 feet; flowers in elongated clusters, April and May, and berries ripe in June; twigs round; pith brown. RED-BERRIED ELDER — Sambucus pùbens.

B. Similar to the last but somewhat tallerand with the twigs often 4-angled and the leaf-stalk smoother. EUROPEAN RED-BERRIED ELDER (370) — Sambucus racemòsa.

The black-berried Elders have many cultivated varieties of great beauty and among them are the cut-leaved forms, laciniàta (371); the golden-leaved — aùrea (372), and the variegated-leaved, variegàta, under both

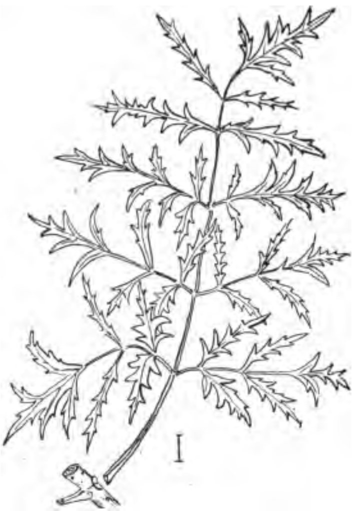


Fig. 371. — American Elder.

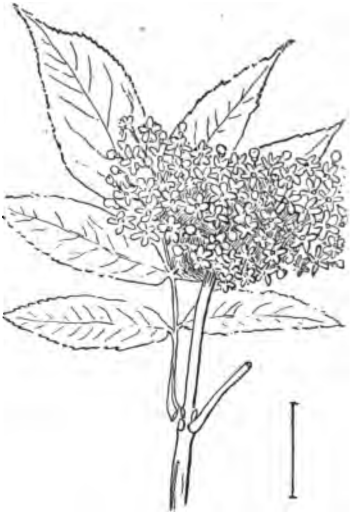


Fig. 372. — Golden American Elder.

species. The silver-leaved, argéntea, is a variety of the European and the glaucous-leaved, glaùca, of the American. It is generally easy to determine the species by the taller growth and smaller pith of the European elder.

[Root cuttings; twig cuttings.]

Symphoricárpos. The Snowberries or Waxberries, and Coral-berries are shrubs with close-clustered fleshy 2-seeded globular white or red berries lasting on the bushes through the fall and part of the winter. The species are all American, all hardy, and are popular because of the abundance and brightness of the berries. The flowers are inconspicuous in size but pinkish in color, in July. The fruit soon forms and, in the cultivated species, is exceedingly abundant. The leaves are opposite, simple, short-stemmed, feather-veined with entire (sometimes lobed) edges. They

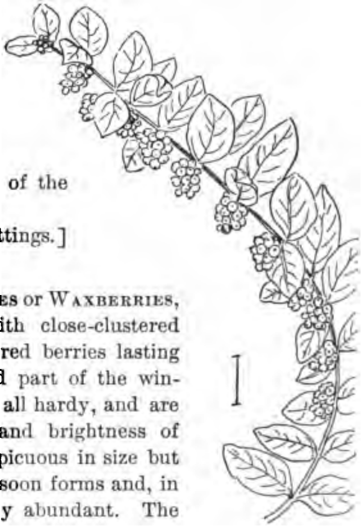


Fig. 373. — Coral-berry.

grow well in any soil and, by suckering, rapidly spread and cover the ground, even in shady places.

KEY TO THE SPECIES OF SYMPHORICARPOS

* Fruit white; stamens and style short and, in the first two species, included in the bell-shaped corolla. (A.)

A. Shrub 2–6 feet high with globular white abundant persistent fruit nearly ½ inch in size; leaves 1–2 inches long. **Snowberry** or **Waxberry** — Symphoricarpos racemòsus.

A. Lower and more spreading with smaller leaves, whitened underneath, fewer and smaller berries. **Low Snowberry** — Symphoricarpos racemòsus paucifiòrus.

A. Stouter growing, 2–6 feet high; the stamens long enough to appear beyond the corolla; berries not so clear nor waxy. **Wolfberry** or **Western Snowberry** — Symphoricarpos occidentàlis.

* Fruit rich dark red; rather compact bush; leaves nearly evergreen. **Indian 'Currant'** or **Coral-berry** (373) — Symphoricarpos orbiculàtus (S. vulgàris).

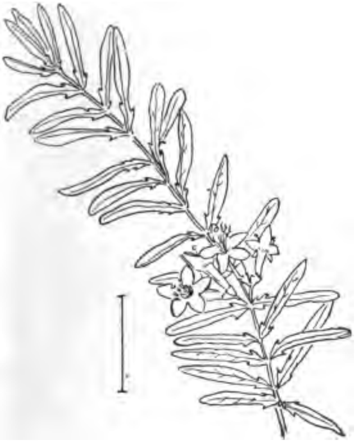


Fig. 374. — Large-fruited Honeysuckle.

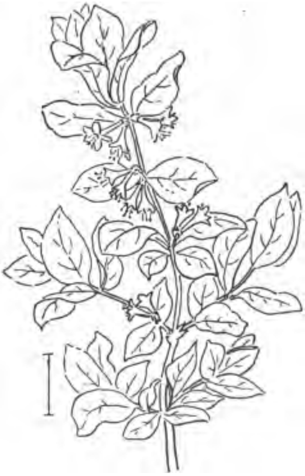


Fig. 375. — Mountain Fly Honeysuckle.

The Coral-berry has two named varieties which might be mentioned; glomeràtus with large clusters of berries, variegàtus with leaves marked with yellow and white. [Suckers; seeds; twig cuttings.]

Lonicera. The true HONEYSUCKLES are of many (100) species of erect shrubs and twining vines so nearly related that all are placed in the same genus. As so many plants are popularly called honeysuckles, though belonging to different families of plants, it would be much better to call the true ones LONICERAS. These last can be known by their opposite entire-edged leaves, somewhat irregular tubular flowers, more or less in pairs, and berry fruit. The berries are few-seeded and of many colors, red, yellow, blue, and black, and add much to the beauty of the plants. About 20 species in cultivation are without climbing habits, and so are included.

The following key will enable one to determine the species if both flowers and fruit are ob-

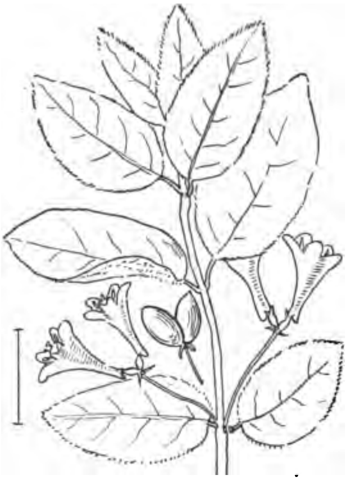


FIG. 376. — American Fly Honeysuckle.

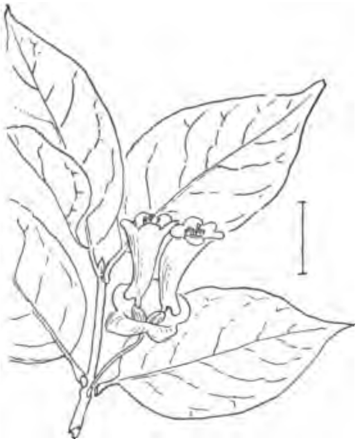


FIG. 377. — Involucred Fly Honeysuckle.

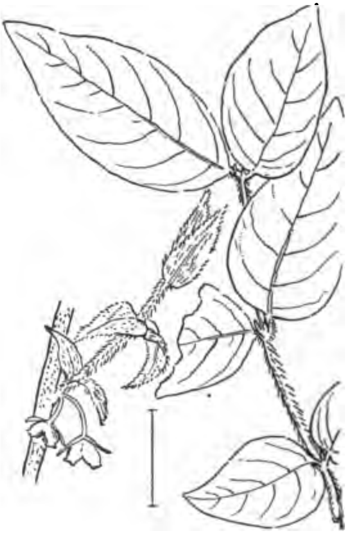


FIG. 378. — Standish's Honeysuckle.

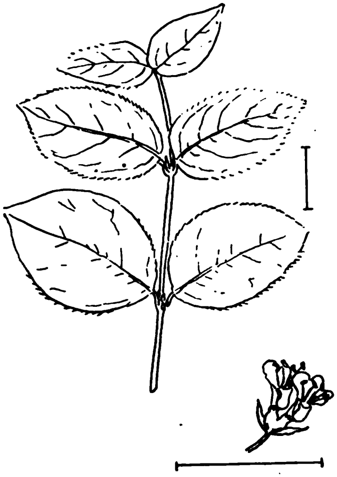


FIG. 379.—**Early Sweet Honeysuckle.**

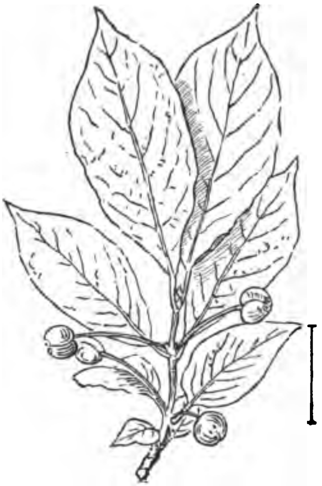


FIG. 380.—**Alpine Honeysuckle.**

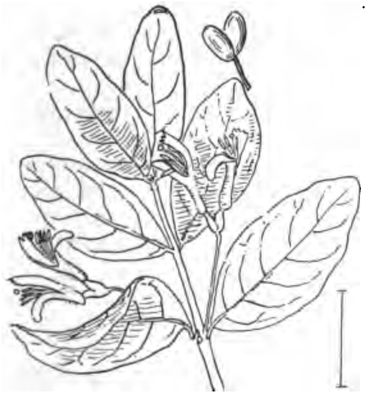


FIG. 381.—**Swamp Fly Honeysuckle.**

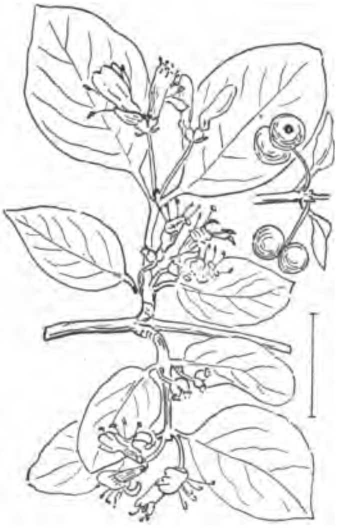


FIG. 382.—**European Fly Honeysuckle.**

served. Lonicera tatárica is very common and has many named varieties, as well as hybrids with other species. [Seeds (slow); twig cuttings.]

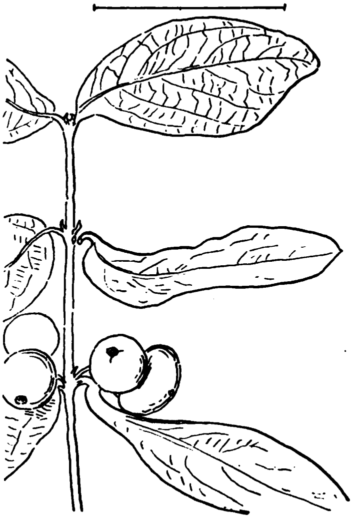


Fig. 383. — Japan Honeysuckle.

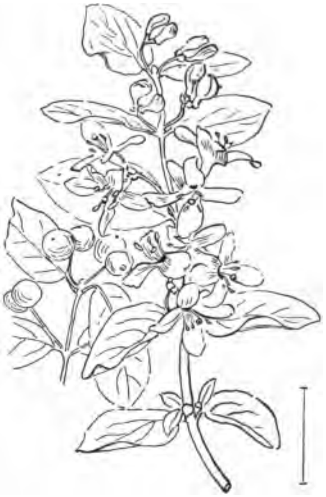


Fig. 384. — Tartarian Honeysuckle.

KEY TO THE BUSHY SPECIES OF LONICERAS

* Flowers nearly regular with a 5-lobed border, growing in pairs with the ovaries more or less united and forming a double berry. (**A.**)

- **A.** Plants less than 2 feet high with small leaves ½–1¼ inches long and pink flowers, May–July. (**B.**)
  - **B.** Rigid spiny shrub; with stamens projecting from the erect rosy flowers. Large-fruited Honeysuckle (374) — Lonicera spinòsa.
  - **B.** Prostrate shrub; with stamens included; leaves often whorled in threes. Low Honeysuckle — Lonicera rupícola.
- **A.** Plants 2 feet or more high; with larger leaves, 1–5 inches long. (**C.**)
  - **C.** Bloom, April and May, before the leaves expand. (**D.**)
    - **D.** Flowers small, ⅓–½ inch, short-stemmed, whitish; fruit blue. Blue or Mountain Fly Honeysuckle (375) — Lonicera cærùlea.

D. Flowers larger, long-stemmed, pinkish; fruit pendulous, scarlet, in June. EARLY HONEYSUCKLE — Lonicera gracílipes.

D. Flowers slender-stemmed, yellowish; fruit light red. AMERICAN FLY HONEYSUCKLE (376) — Lonicera canadénsis (L. ciliàta).

D. Flowers large, 1–1½ inches, white, nodding; fruit oblong, bright red. HISPID HONEYSUCKLE — Lonicera híspida.

C. Bloom, May–July, after the leaves expand; berries black. (**E.**)

E. Flowers gummy outside (½ inch long), yellowish; berries shining, inclosed in large bracts; leaves 2–5 inches long. INVOLUCRED FLY HONEYSUCKLE (377) — Lonicera involucràta.

E. Flowers scarlet outside (¾ inch long). LEDEBOUR'S HONEYSUCKLE — Lonicera Ledebouri.

* Flowers 2-lipped, small, growing together at base and forming a more or less double berry, flowers white or yellowish (on L. alpigèna brownish-red), small, to ½ inch. (**F.**)

F. Leaves thick and nearly evergreen; fruit scarlet; bloom March–May, before the new leaves. (**G.**)

G. Branches slender and spreading or recurving; shrubs to 6 feet; flowers short-stemmed and stems without bractlets, flowers sweet-scented. (**H.**)

H. Branches with bristly hairs bent backward. STANDISH'S HONEYSUCKLE (378) — Lonicera Stándishi.

H. Branches nearly smooth and more recurving. EARLY SWEET HONEYSUCKLE (379) — Lonicera fragrantíssima.

G. Branches stout and more erect, to 8 feet; leaves glossy dark green above; flowers long-stemmed and with small bracts on the stems. ALPINE HONEYSUCKLE (380) — Lonicera alpigèna.

F. Leaves thinner; fruit dark red; bloom later, May, June. SWAMP FLY HONEYSUCKLE (381) — Lonicera oblongifòlia.

* Flowers with the ovaries separate and thus forming 2 berries on one stem; shrub 5–12 feet high; bloom May, June. (**I.**)

I. Flowers white changing to yellow when old; branches pubescent. (**J.**)

J. Flowers hairy outside. (**K.**)

K. Leaves usually wider near tip, dull green, 1–3 inches long. EUROPEAN FLY HONEYSUCKLE (382) — Lonicera Xylósteum.

K. Leaves usually wider near center or base, dark green above, grayish-hairy below (1–2 inches long). JAPAN HONEYSUCKLE (383) — Lonicera Mórrowi.

J. Flowers smooth outside; leaves slender, grayish-hairy below

(2–4 inches long). Manchurian Honeysuckle — Lonicera Ruprechtiàna.

- **I.** Flowers pink, red, or white and not changing to yellow when old; fruit red, yellow, or orange. (**L.**)
  - **L.** Hairy shrub with small, ½–1½ inches long, bluish or grayish green leaves; flowers abundant; fruit red. Free-flowering Honeysuckle — Lonicera floribúnda.
  - **L.** Smooth shrub with larger, 1–2½ inches long, leaves often heart-shaped at base. Very variable and common, to 10 feet. Tartarian Honeysuckle (384) — Lonicera tatárica.

The last four species are very common, with many hybrids, and thus intermediate forms are known.

Diervílla and Weigèla are genera closely related to Lonicera and are often popularly called honeysuckles. Loniceras have fleshy few-seeded berries for fruit, while Diervillas and Weigelas have dry oblong many-seeded capsules. Diervilla and Weigela are often united under the name Diervilla, but for our purpose had better be considered as separate. The Diervillas proper have small, ½–¾ inch long, slender-tubed, 2-lipped, yellow flowers of no great beauty and seldom found in cultivation.

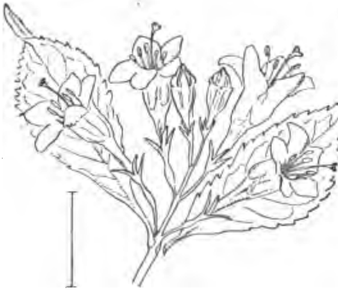


Fig. 385. — Common Weigela.

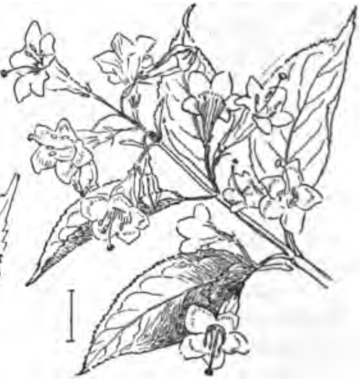


Fig. 386. — Large-flowered Weigela.

The Weigelas are among our most popular flowering shrubs, with large funnel-shaped, 5-lobed corollas of many colors. The leaves are opposite, simple, feather-veined with notched edges. Besides the four or five original species from eastern Asia, of which there are many varieties, there are an almost endless number of hybrids now in cultivation. In fact, the tendency is to cultivate only these hybrid forms, as the flowers

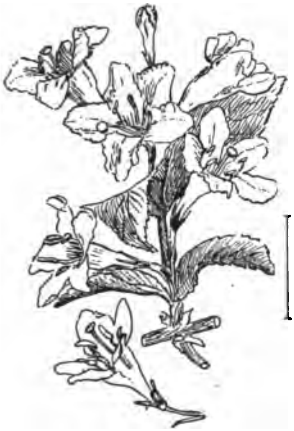


FIG. 387. — Japan Weigela.

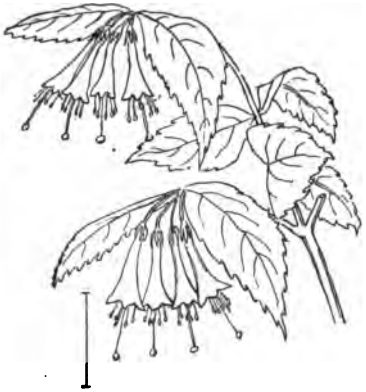


FIG. 388. — Many-flowered Weigela.

show greater beauty and variety. There are forms in bloom from early May to late August. The colors of the flowers vary from pure white through the pinks, red, crimson, and purple; of pure colors as well as blotched and striped in many ways. One of the especially attractive points about the flowers is the change that takes place in the colors of the

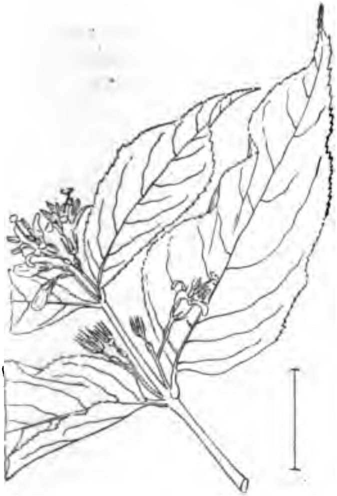


FIG. 389. — Diervilla.

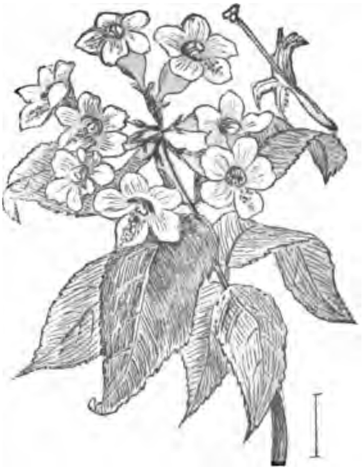


FIG. 390. — Middendorf's Weigela.

blossoms after expanding. Some which open pure white change to pale pink and end as bright carmine. Weigela flórida has several forms with variegated white and yellow foliage. As with the roses and their numberless hybrids, so here it is impossible to show, without the finest colored illustrations, the named forms in cultivation. [Twig cuttings.]

KEY TO THE SPECIES OF WEIGELA

* Anthers of the stamens separate, not united around the pistil. (**A.**)

A. Flowers not definitely yellow and an inch or more long. (**B.**)

B. Calyx united at the base and sometimes to the middle; stigma decidedly 2-lobed; seeds without thin wing-like projections. **COMMON WEIGELA** (385) — Weigela flórida.

B. Calyx of 5 separate linear pieces; stigma broad and head-like; seeds with wings. (**C.**)

C. Shrub 5–10 feet high and nearly smooth throughout; flowers and leaves large; flowers not abundant. **LARGE-FLOWERED WEIGELA** (386) — Weigela grandiflòra.

C. Shrub 4–8 feet and pubescent, lower sides of leaves especially so; flowers pubescent outside. (**D.**)

D. Corolla abruptly narrowed below the middle; flower-clusters short-stalked. **JAPAN WEIGELA** (387) — Weigela japónica.

D. Corolla gradually narrowed to the base; flower-clusters about sessile; plant more vigorous; flowers smaller and more abundant. **MANY-FLOWERED WEIGELA** (388) Weigela floribúnda.

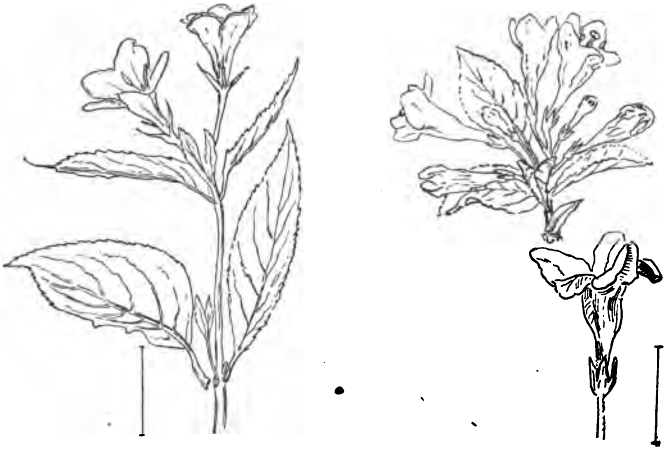
A. Flowers yellow, small, ½–¾ inch, plainly 2-lipped, Diervilla proper. (**E.**)

E. Leaves distinctly stalked: branchlets round. **DIERVILLA. BUSH 'HONEYSUCKLE'** (389) — Diervilla Lonícera (D. trífida).

E. Leaves nearly sessile; branchlets square. **HIGH-BUSH 'HONEYSUCKLE'** — Diervilla sessilifólia.

* Anthers of the stamens united around the pistil; flowers broad-funnel-form, yellowish white spotted with orange and purple; calyx notched and irregular. Low shrub to 3 feet. **MIDDENDORF'S WEIGELA** (390) — Weigela Middendorfiàna.

On the following page are illustrations of two of the hybrid forms (391). **EVA RATHKE WEIGELA** — Weigela (Diervilla) Eva Rathke — deep carmine red, blooming late, June and July. **DESBOISI'S WEIGELA** — Weigela Desboisi — deep rose, blooming May.



a, Eva Rathke Weigela. *b*, Desboisi's Weigela.

FIG. 391. — Two Hybrid Forms of Weigela.

Abèlia. The ABELIAS are tender low shrubs with small opposite notched leaves and tubular to funnel-formed 5-lobed flowers in terminal or axillary clusters, panicles. The lightly irregular flowers are especially dainty and bloom for a long period;

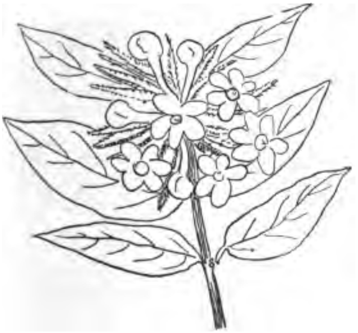


FIG. 392. — Entire-leaved Abelia.

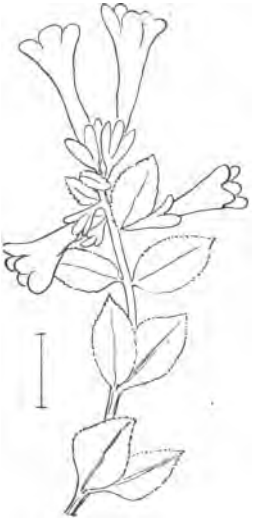


FIG. 393. — Mexican Abelia.

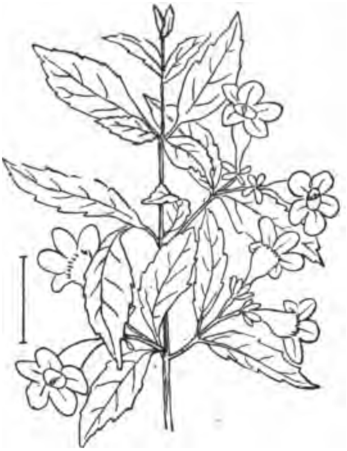


Fig. 394. — Yellow-throated White Abelia.

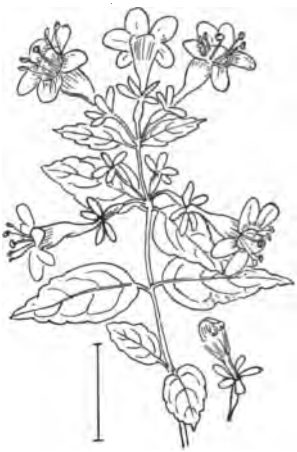


Fig. 395. — Hybrid Abelia.

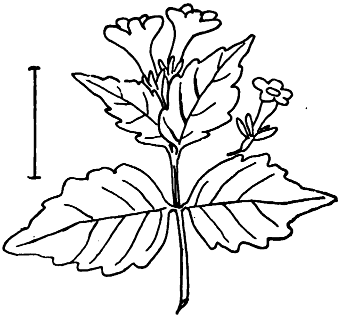


Fig. 396. — Serrate-leaved Abelia.

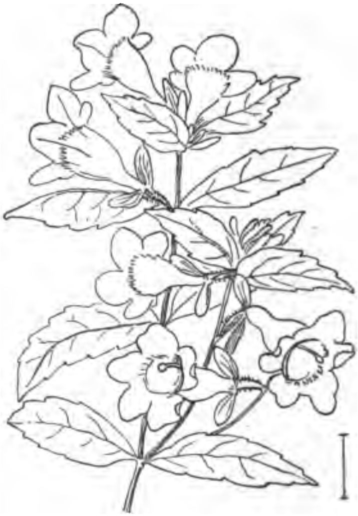


Fig. 397. — Yellow-throated Rosy Abelia.

the fruit is a dry leathery berry. Only one species, **Ever-flowering Abelia** — Abelia grandiflòra, — can be grown as far north as New York, even if protected. It has much the appearance of a Weigela and is frequently called one. All Weigelas have 5-pointed sepals closely covering the base of the corolla. The Abelias have peculiarly irregular sepals, often leaf-like and spreading and varying in number from 2 to 5 in the different species. The leaves are never over 2 inches long, generally about an inch. Many of the Abelias are evergreen, all are fitted for outdoor cultivation in the Gulf states, and several will probably do well in protected positions north to Washington.

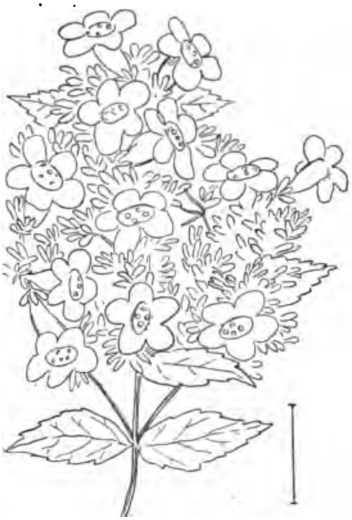


Fig. 398. — Chinese Abelia.

[Twig cuttings, in summer; layers, in spring.]

KEY TO THE SPECIES OF ABELIA

* Leaves thick, nearly or fully evergreen. (**A.**)

- **A.** Sepals 5. (**B.**)
  - **B.** Leaves nearly entire; flowers white with a pink tinge. **Entire-leaved Abelia** (392) — Abelia triflòra.
  - **B.** Leaves distinctly notched, oval; flowers large, 2 inches, rosy-purple. **Mexican Abelia** (393) — Abelia floribúnda.
  - **B.** Leaves notched, ovate; flowers over an inch long, white with a yellowish throat. **Yellow-throated White Abelia** (394) — Abelia spathulàta.
- **A.** Sepals irregularly 2, 3, 4, or 5; flowers abundant, white with tinge of pink, nearly an inch long, blooming continuously from June to November. The hardiest species. **Hybrid Abelia** (395) — Abelia grandiflòra (A. rupéstris).
- **A.** Sepals generally 2; leaves notched. (**C.**)
  - **C.** Flowers pale red. **Serrate-leaved Abelia** (396) — Abelia serràta.

C. Flowers rosy-white with a yellow throat. YELLOW-THROATED ROSY ABELIA (397) — Abelia uniflòra.

* Leaves thinner and deciduous; flowers white. (D.)

D. Sepals 5; flowers small, ½ inch long, stamens exserted; leaves ovate, serrate with hairs on midrib beneath. CHINESE ABELIA (398) — Abelia chinénsis.

D. Sepals 4; leaves ovate-lanceolate, hairy, coarsely serrate. TWO-FLOWERED ABELIA — Abelia biflòra.

Gardènia. The CAPE 'JASMINE' and other beautiful plants are included among the GARDENIAS. The name jasmine or jessamine is given to many different species belonging to several different families, so, as with the name honeysuckle, it would be well to learn the proper names for each group and properly apply them and not use either 'jasmine' or 'honeysuckle' without some modification to show the exact genus intended. (The name jessamine should be restricted to the genus Jasminum (p. 273) and honeysuckle to Lonicera (p. 230). This application of names would stop most of the confusion. Of course Cape 'Jasmine' will always mean Gardenia.) The Gardenias have opposite simple entire evergreen leaves and sweet-scented tubular white flowers with spreading

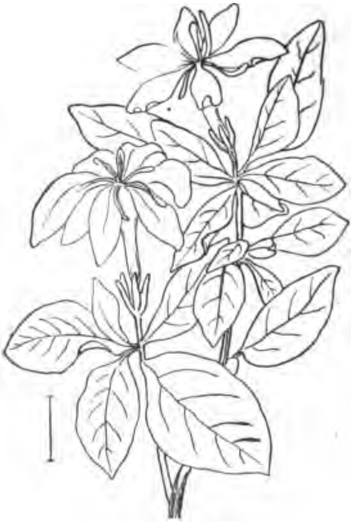


FIG. 399. — Cape 'Jasmine.'

border (salver- or bell-shaped) of 5 or more lobes. The Gardenias proper have a 1-celled pod. They are hardy only in the South.

CAPE 'JASMINE' (399) — Gardenia jasminoides — has a calyx with 5 slender teeth and distinct ridges along the sides of the united portion. The corolla, in the usually cultivated variety, is fully double with many white waxy lobes. There are many varieties under many names, differing in the width of the leaves and the height and habit of plant growth. Hardy to the Carolinas and extensively cultivated North in conservatories. A similar plant, but with gummy buds and without ridges on the calyx, is DIKAMALI, CAMBI, or RESIN-PLANT — Gardenia lùcida.

[Seeds; layers; twig cuttings.]

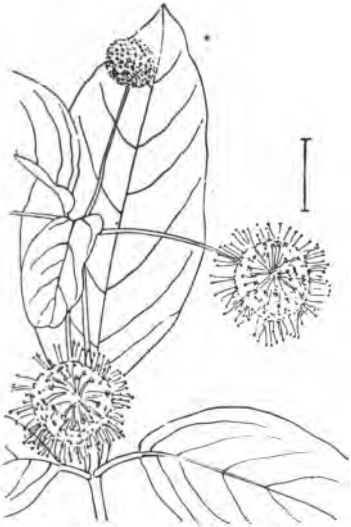


FIG. 400. — Buttonbush.

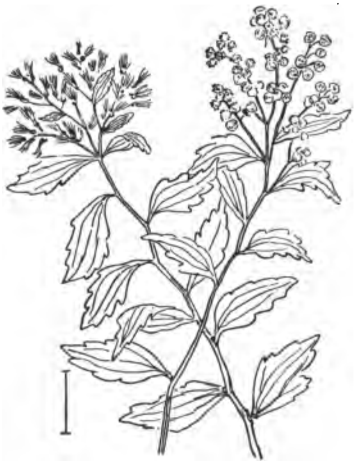


FIG. 401. — Groundsel Bush.

Cephalánthus occidentàlis. The BUTTONBUSH (400) is a wild American shrub (3–12 feet) growing in wet places and sometimes cultivated. It has simple entire glossy opposite or whorled leaves and small, white tubular flowers forming a globular cluster an inch or more broad, June to September. The leaves are 3 to 6 inches long and 1 to 2½ inches wide, often in whorls of threes around the stems. The fruit is a round cluster of dry 1- to 2-seeded nutlets. [Seeds; twig cuttings.]

Báccharis. GROUNDSEL BUSH (401) or SALT-WATER SHRUB — Baccharis halimifòlia, — 3 to 12 feet high, is a plant with angular somewhat scurfy

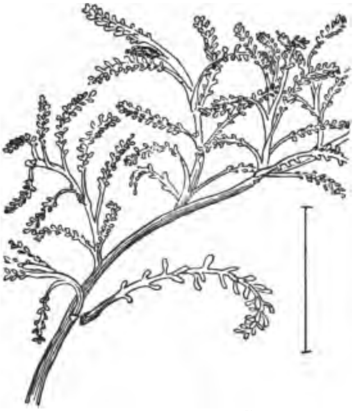


FIG. 402. — Lavender Cotton.

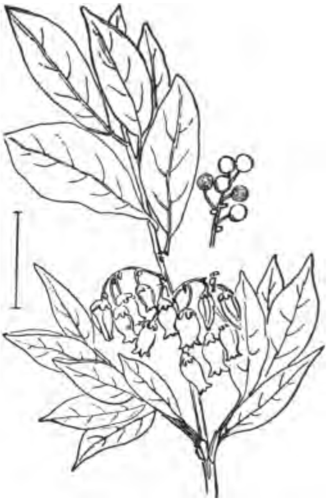


FIG. 403. — Black Huckleberry.

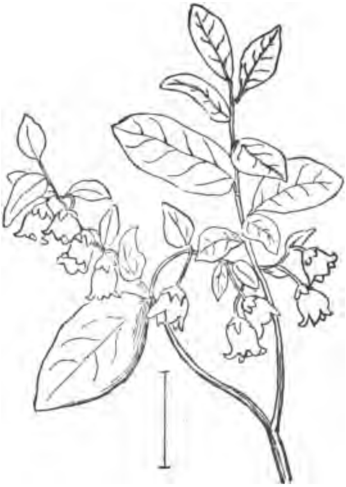


FIG. 404. — Dwarf Huckleberry.

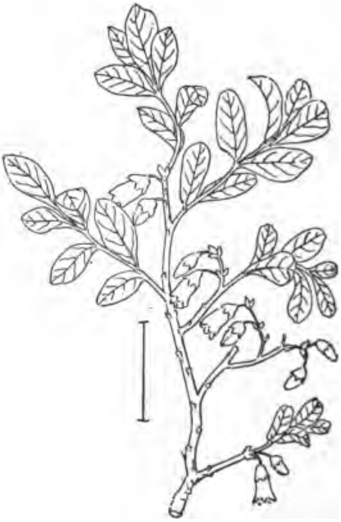


FIG. 405. — Bog Bilberry.

branches, alternate simple entire to lobed leaves and persistent collection of hairy fruits resembling small white brushes, in fall and early winter. The shrub is diœcious, so not all of them have this showy appearance. This plant belongs to the daisy group of flowers, the individual blossoms are very small and grow in heads which are popularly considered as the flowers. The part which produces the showy appearance of the groundsel bush is the pappus, so conspicuous in thistles. The stamen-bearing plant has unconspicuous yellowish flowers. It is a useful shrub, especially for coastwise cultivation, as it particularly thrives in the salt air. A southern plant with willow-like deciduous leaves, WILLOW LEAVED GROUNDSEL TREE — Baccharis salicifòlia, — may be in cultivation An evergreen species of the Pacific region is Baccharis pilulàris.

[Seeds; twig cuttings under glass.]

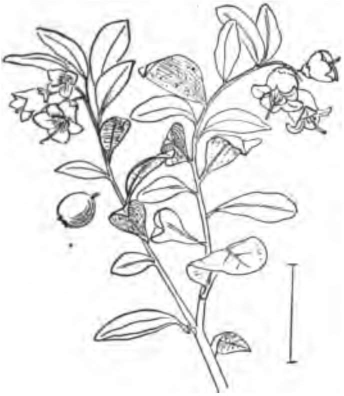


FIG. 406. — Foxberry.

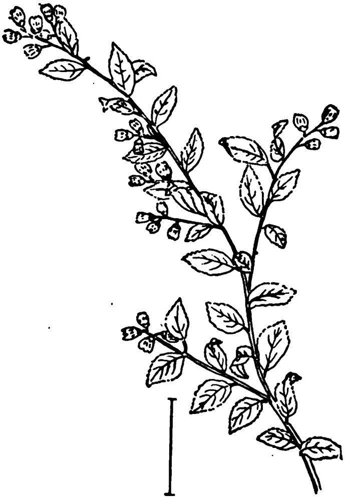


FIG. 407. — Evergreen Vine Blueberry

Santolìna Chamæcyparíssus. LAVENDER COTTON (402) is a half-shrubby plant (1½–2 feet) with aromatic alternate evergreen deeply-lobed silvery gray leaves and small globular heads of yellow flowers, in summer. It is used South for the shrubbery, but North mainly for carpet-bedding, for this latter purpose slips rooted in sand are kept through the winter.

[Twig cuttings.]

Gaylussàcia and Vaccínium. The HUCKLEBERRIES and BLUEBERRIES are wild plants rarely brought into cultivation even for fruiting purposes, and thus scarcely need a place in this book. Still there are a few species which have beautiful flowers, foliage, and fruit and belong to the very limited group which thrive in shady places.

HIGH-BUSH BLUEBERRY — Vaccinium atrococcum (V. corymbòsum) — is a tall straggling shrub 4 to 12 feet with yellowish green warty branches, alternate usually entire leaves, white or pinkish tubular flowers in clusters on short leafless twigs, May, June, and abundant many-seeded blue-black berries, July, August.

DEERBERRY or BUCKBERRY — Vaccinium stamíneum — is a spreading branched shrub 2 to 5 feet with entire-edged pale leaves and abundant greenish white bell-shaped nodding flowers with projecting stamens, April to June. The large greenish or yellowish berries (½ inch) are hardly edible. [Seeds, with difficulty; divisions.]

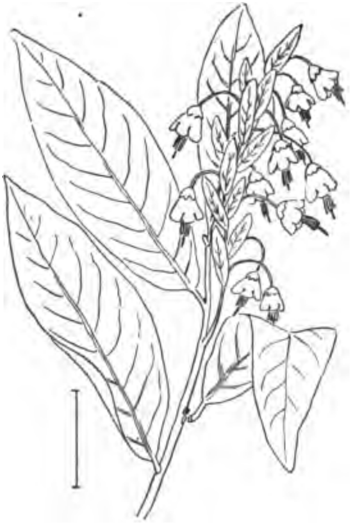


FIG. 408. — Deerberry.

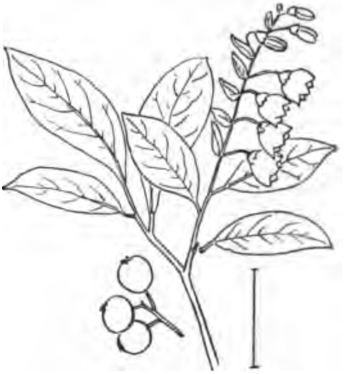


FIG. 409. — Farkleberry.

KEY TO HUCKLEBERRIES, BLUEBERRIES, ETC.

* Berries 10-seeded, Gaylussacias. (**A.**)

- **A.** Leaves sprinkled with waxy dots, entire, deciduous. (**B.**)
  - **B.** Leaves pale and glaucous beneath; fruit blue, with bloom. Erect (2–4 feet high). **Blue Tangle** or **Dangleberry** — Gaylussacia frondòsa.
  - **B.** Leaves green both sides; shrubs under 3 feet. (**C.**)
    - **C.** Bracts small, ⅛ inch, among the flowers and fruit; fruit sweet but seedy. **Black Huckleberry** (403) — Gaylussacia baccáta (G. resinòsa).
    - **C.** Bracts leafy and longer than the flower-stems; fruit watery and insipid. **Dwarf Huckleberry** (404) — Gaylussacia dumòsa.
- **A.** Leaves thick, evergreen, serrate with the edges somewhat rolled. Shrub under 1½ feet high. **Box Huckleberry** — Gaylussacia brachýcera.

* Berries many-seeded — Vacciniums. (**D.**)

- **D.** Flowers tubular or urn-shaped, not open-bell-shaped. (**E.**)
  - **E.** Flowers and fruit solitary or in small clusters of 2–4. (**F.**)
    - **F.** Shrubs under 2 feet high; leaves under 1 inch long. (**G.**)
      - **G.** Leaves entire, whitish beneath. **Great** or **Bog Bilberry** (405) — Vaccinium uliginòsum.
      - **G.** Leaves minutely notched, green and shining both sides. **Dwarf Bilberry** — Vaccinium cæspitòsum.
    - **F.** Shrubs 2–15 feet high; leaves 1-3 inches long. (**H.**)
      - **H.** Leaves about entire, pale beneath. **Oval-leaved Bilberry** — Vaccinium ovalifòlium.
      - **H.** Leaves minutely notched, green both sides. **Thin-leaved Bilberry** — Vaccinium membranàceum (V. myrtilloìdes).
  - **E.** Flowers and fruit in larger clusters. (**I.**)
    - **I.** Flowers elongated, 2 or 3 times as long as wide. Tall, 3–15 feet. (**J.**)
      - **J.** Flowers appearing before the leaves. **Southern Black Huckleberry** — Vaccinium virgàtum.
      - **J.** Flowers at the time of leaf-expansion. **High-bush** or **Swamp Blueberry** — Vaccinium corymbòsum.
    - **I.** Flowers less elongated — not over 2 times as long as wide. (**K.**)
      - **K.** Shrubs 3–15 feet high; leaves densely hairy beneath. **Black High Blueberry** — Vaccinium atrocóccum (V. corymbòsum).

K. Shrubs under 2 feet high. (**L.**)

L. Twigs hairy; leaves entire; fruit blue, with bloom. Sour-top or Velvet-leaf Blueberry — Vaccinium canadénse.

L. Twigs, leaves, and fruit hairy. Hairy Huckleberry — Vaccinium hirsùtum.

L. Twigs warty; leaves minutely notched; berries bluish black and glaucous. Low or Early Sweet Blueberry — Vaccinium pennsylvánicum.

L. Twigs smooth; leaves minutely notched; berries black without bloom. Low Black Blueberry — Vaccinium pennsylvanicum nigrum (V. nigrum).

K. Shrubs generally over 2 feet high; twigs green and warty; leaves pale beneath. (**M.**)

M. Leaves thick, about entire; berry ¼ inch, blue with a bloom. Late Low Blueberry — Vaccinium vacíllans.

M. Leaves thin, sharply notched; berry larger. Mountain Blueberry — Vaccinium corymbosum pállidum (V. pallidum).

D. Flowers open-bell-shaped. (**N.**)

N. Flowers 4-notched; leaves evergreen, small, under 1 inch; shrub under 1 foot; berries dark red. Cowberry or Foxberry (406) — Vaccinium Vìtis-Idæa.

N. Flowers 5-notched; leaves evergreen, ½ inch or less long; creeping plant, with black berries, hardy South. Evergreen Vine Blueberry (407) — Vaccinium crassifòlium.

N. Flowers 5-notched; leaves deciduous; shrubs over 2 feet. (**O.**)

O. Stamens much exserted; berry green or yellow; shrub 2–5 feet high. Deerberry or Buckberry (408) — Vaccinium stamíneum.

O. Similar to the last, berry larger, shining black. "A valuable shade-enduring ornamental shrub." Southern Gooseberry — Vaccinium melanocárpum.

O. Stamens included; berry black, ripe in Oct. Shrub or tree 8–30 feet. Farkleberry or Sparkleberry (409) — Vaccinium arbòreum.

Arctostáphylos. This genus contains a number of species (30) of shrubs or small trees and includes some trailing vines. All in cultivation here are American. (Only the trailing species are hardy North and of course are omitted.) The leaves are alternate, usually evergreen with entire margins. Flowers small, globular in terminal clusters, panicles, in spring. Fruit a red berry. [Seeds; twig cuttings.]

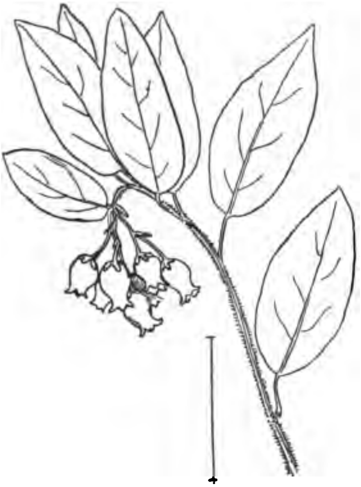


FIG. 410. — Downy Arctostaphylos.

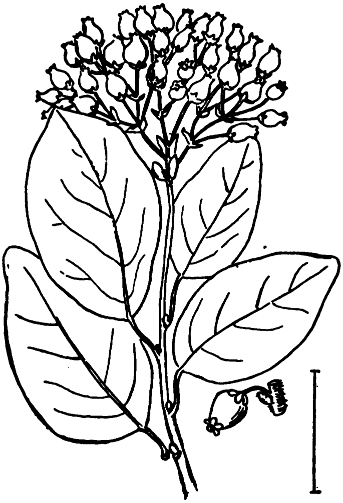


FIG. 411. — Manzanita.

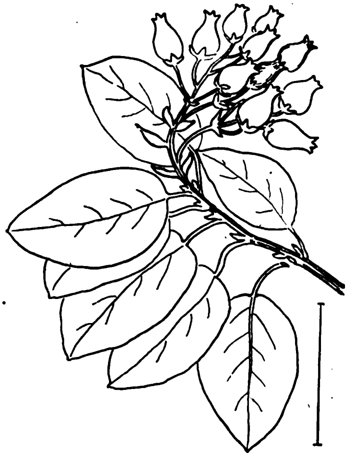


FIG. 412. — Pale-leaved Arctostaphylos.

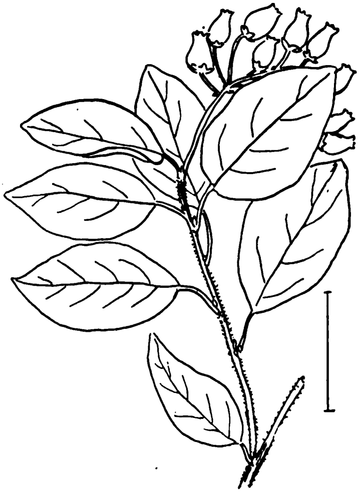


FIG. 413. — Bristly Arctostaphylos.

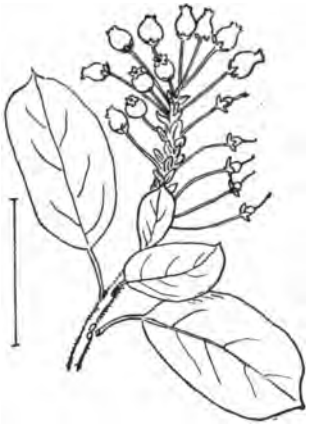


Fig. 414. — Pringle's Arctostaphylos.

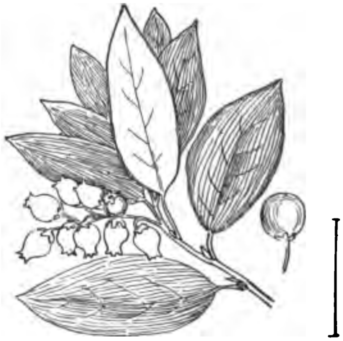


Fig. 415. — Bicolored Arctostaphylos.

KEY OF FORMS OF ARCTOSTAPHYLOS FROM THE PACIFIC REGION HARDY ONLY SOUTH

* **Leaves smooth and fruit on smooth stems. (A.)**

A. Flowers in umbel-like clusters; shrub 3–10 feet. **Downy Arctostaphylos** (410) — Arctostaphylos púngens.

A. Flowers in elongated clusters; shrub or tree to 30 feet. **Manzanita** (411) — Arctostaphylos Manzanìta.

* **Leaves smooth; fruit stems glandular. (B.)**

B. Flowers in elongated clusters; shrub or tree 8–25 feet. **Pale-leaved Arctostaphylos** (412) — Arctostaphylos glaùca.

B. Flowers in spreading clusters, light pink on sticky stems; 5–15 feet. Most ornamental. **Viscid Arctostaphylos** — Arctostaphylos víscida.

* **Leaves more or less hairy; twigs bristly. (C.)**

C. Flowers in dense short panicles; 2–6 feet. Hardiest species. **Bristly Arctostaphylos** (413) — Arctostaphylos tomentòsa.

C. Flowers in leafy clusters; fruit bristly. **Pringle's Arctostaphylos** (414) — Arctostaphylos Prínglei.

C. Flowers in nodding dense racemes rose-colored; fruit smooth. **Biçolored Arctostaphylos** (415) — Arctostaphylos bìcolor.

Árbutus Unèdo. The STRAWBERRY TREE (416) is a tree-like shrub 8 to 15 feet with evergreen simple alternate nearly entire leaves (2–3 inches), globular red berries (¾ inch) with many seeds and ovate white to red flowers (about ½ inch long) in nodding clusters. The bloom and the fruit of the preceding year are both on the shrub through the fall and render the plant very decorative. The leaves are a lustrous smooth green. Hardy only far South. [Seeds; twig cuttings.]

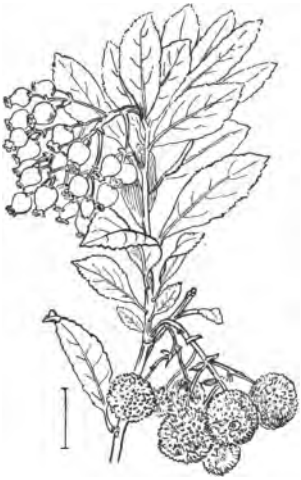


FIG. 416. — Strawberry Tree.

Andrómeda. For our purpose this old genus name is much the better one for a large number of beautiful shrubs which have clusters of small tubular urn-shaped and globular flowers forming small 5-valved dry capsules with many seeds. The leaves are simple, alternate with entire or notched edges. Most of them will be found in plant

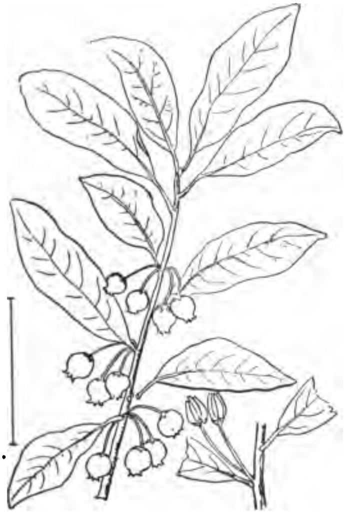


FIG. 417. — Scurfy Andromeda.

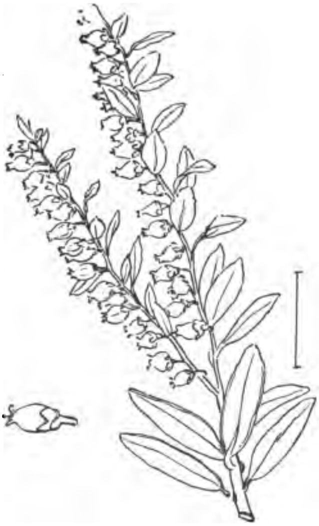


FIG. 418. — Leather Leaf.

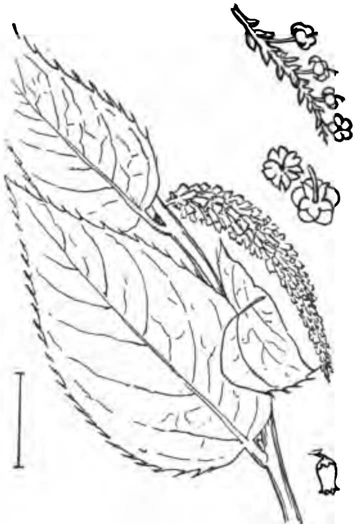


FIG. 419. — Catesby's Leucothoë.

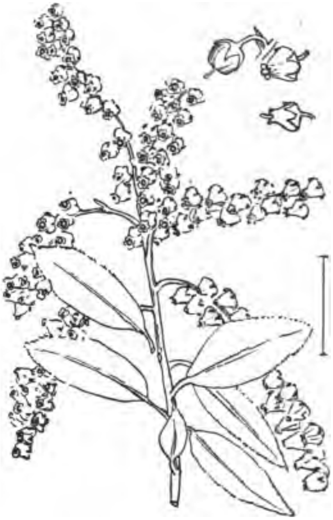


FIG. 420. — Mountain Fetter Bush.

catalogues under this name. The group has been so divided by late botanists, based upon such microscopic characters, that the average student cannot properly separate them. (The new names are given at the end.)
[Seeds, in spring; layers; twig cuttings.]

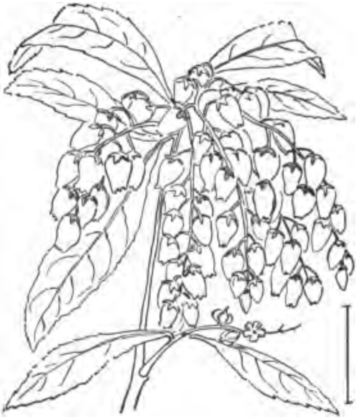


FIG. 421. — Japan Fetter Bush.

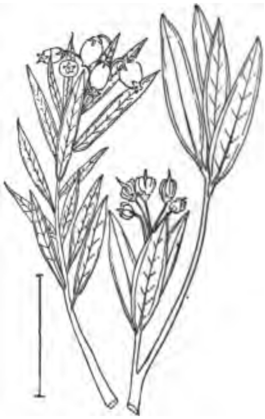


FIG. 422. — Marsh Andromeda.

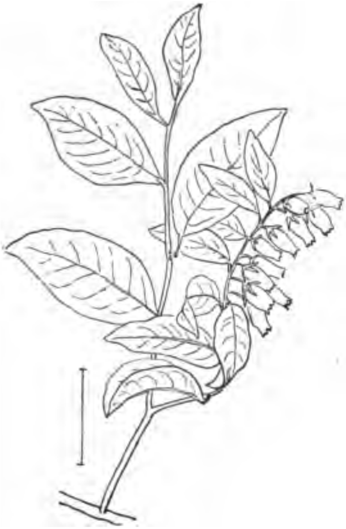


FIG. 423. — Fetter Bush.

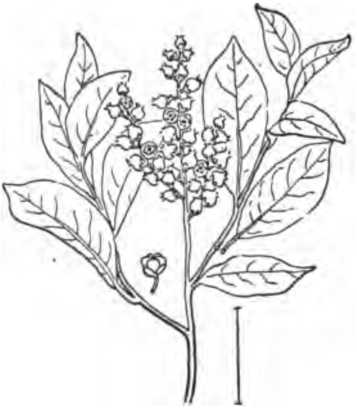


FIG. 424. — Privet Andromeda.

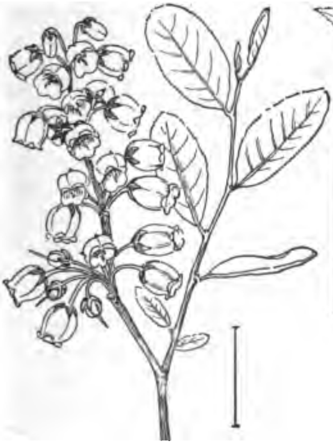


FIG. 425. — Beautiful Zenobia.

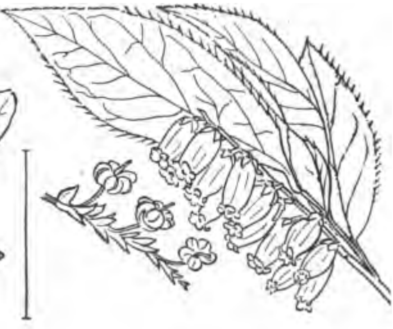


FIG. 426. — Swamp Leucothoë.

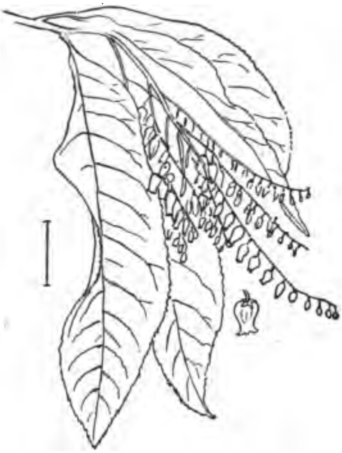


Fig. 427. — Sourwood.

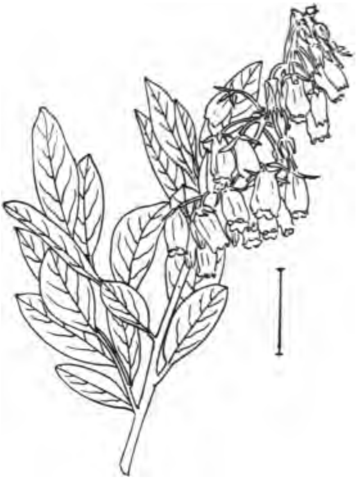


Fig. 428. — Stagger-bush.

KEY TO THE ANDROMEDA-LIKE SHRUBS

* Leaves thick and evergreen (Privet Andromeda of the 2d * is nearly evergreen). (**A.**)

A. Flowers very small, ⅛ inch long, globular, nodding and clustered in axils of somewhat reduced leaves, Feb.–April. Shrub or tree with scurfy twigs, 5–25 feet tall. **Scurfy Andromeda** (417) — Andromeda (Xolísma) ferrugínea.

A. Flowers more elongated — usually twice as long as wide. (**B.**)

B. Flowers in one-sided racemes. (**C.**)

C. Flower-clusters with large leaf-like bracts as long as the flowers, April–June; leaves densely covered with small round scurfy scales. Shrub 1–4 feet high. **Leather Leaf** (418) — Chamædáphne calyculàta.

C. Bracts, of the flower clusters, much smaller or absent. (**D.**)

D. Leaves large, 3–6 inches, with bristly-tipped teeth; flowers slender (nearly ¼ inch long), April. 2–6 feet, hardy with protection to New York. **Catesby's Leucothoë** (419) — Leucóthoë Catesbǽi.

D. Leaves somewhat smaller without bristly teeth; young twigs hairy. 2–5 feet, hardy. Downy Leucothoë — Leucothoë axillàris.

D. Leaves (1–3 inches) with small teeth and bristly edges, black-dotted beneath; flower-clusters somewhat nodding, May. 2–6 feet. Mountain Fetter Bush (420) — Andromeda floribúnda (Pièris floribunda).

D. Similar to the last but the flowers are much larger and in more drooping clusters and the plant is much taller — to 30 feet. Japan Fetter Bush (421) — Pieris japónica (P. ovalifòlia).

D. Similar to the last two but with larger leaves, 3–5 inches long. Indian Fetter-bush — Pieris formòsa.

B. Flowers in pendent terminal umbels; leaves linear, entire with rolled edges. 1–3 feet. Marsh Andromeda (422) or Wild Rosemary — Andromeda polifòlia.

B. Flowers in close axillary umbels; leaves oval, entire with slightly rolled edges. Fetter Bush (423) — Lyonia nítida (Pieris nitida).

* Leaves thinner and deciduous. (**E.**)

E. Flowers globular or rounded-bell-shaped, only about as long as wide. (**F.**)

F. Flowers very small, ⅛ inch, abundant in panicled terminal clusters, May–July; leaves firm (almost evergreen), entire, 1–2½ inches long. Privet Andromeda or Male Berry (424) — Lyonia ligustrìna (Andromeda paniculàta).

F. Flowers larger, ¼ inch, and more bell-shaped; branching shrubs 3–7 feet: handsome plants hardy to Massachusetts if somewhat protected. (**G.**)

G. Lower surface of leaves green; blooming May, June. Beautiful Zenobia (425) — Andromeda (Zenòbia) speciòsa.

G. Leaves densely glaucous. Glaucous Zenobia — Andromeda (Zenòbia) pulverulénta.

E. Flowers tubular or urn-shaped, about twice as long as wide. (**H.**)

H. Flowers about ¼ inch long in one-sided racemes, very sweet-scented, April–June. Good for shady places, though growing well in the open; hardy. (**I.**)

I. Shrubs to 12 feet blooming April, May. (**J.**)

J. Racemes much curved; capsule decidedly 5-lobed. Wild in dry woods; 2–10 feet. Mountain Leucothoë — Leucóthoë recúrva.

J. Racemes nearly straight; capsule not lobed. Growing in swamp; 5–12 feet. Swamp Leucothoë (426) — Leucothoë racemòsa.

I. Tree to 50 feet; blooming June, July. Flowering when small and shrub-like; leaves sour. **Sourwood** (427) or **Sorrel-tree** — Oxydéndrum arbòreum.

H. Flowers larger, ½ inch long, in side-umbels, white or faintly pink, May–July. A beautiful shrub, 1–4 feet. **Stagger-bush** (428) — Lyònia mariàna (Pieris mariàna).

Erìca. The **Heaths** and **Heather** are all small-leaved, shrubby plants with usually small 4-lobed, bell- or urn-shaped flowers. The leaves are scale- or linear-shaped and arranged on the stems in alternate, opposite, or whorled positions. The fruit is a 4-celled capsule. But few are in cultivation in the open in America because of our hot and dry summers. Only three have escaped and grow without cultivation. These are European species, although those cultivated in Europe are mainly from South Africa. The African species are practically unknown in America excepting in conservatories.

The smaller leaves, the 4-lobed flowers, and the 4-celled fruit will separate the heaths from the andromedas. [Seeds; twig cuttings.]

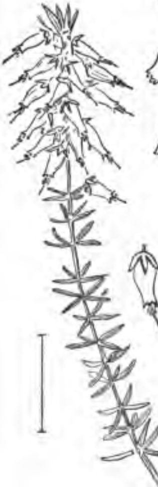


Fig. 429.—Pink Moor Heath.

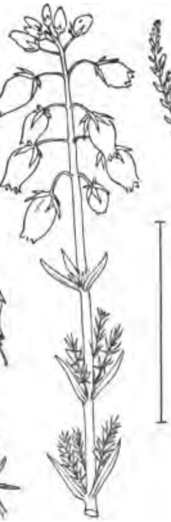


Fig. 430.—Scotch Heath.

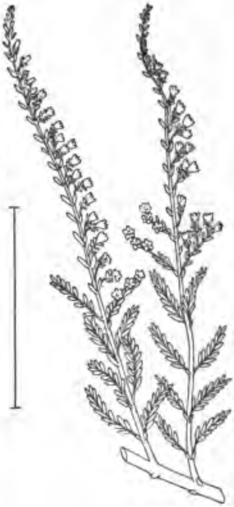


Fig. 431.—Heather.

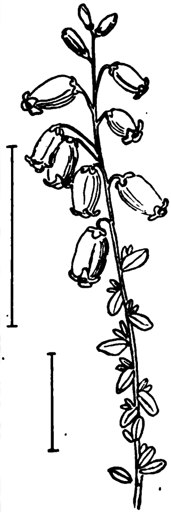


Fig. 432.—Irish Heath.

KEY TO HEATHS AND HEATHER

* Hardy heaths with the leaves whorled. (**A.**)

A. Spring-blooming (March–May), flowers bell-shaped white or red. **Pink Moor Heath** (429) — Erica cárnea.

A. Summer- and fall-blooming. (**B.**)

B. Leaves whorled generally in 3's; flowers about ¼ inch long. **Scotch Heath** (430) — Erica cinèrea.

B. Leaves whorled in 4's or 5's. (**C.**)

C. Pod without hairs; flowers white or purplish red. **Cornish Heath** — Erica vàgans.

C. Pod with long rough hairs; branches rigid. **Corsican Heath** — Erica strícta.

C. Pod velvety; leaves with rolled edges; flowers rosy. **Bell Heather** — Erica Tétralix.

* Hardy heather with leaves opposite and covering the stem. **Heather** or **Ling** (431) — Callùna vulgàris.

* Leaves alternate and white below; flowers drooping in long racemes. Needs protection North. **Irish Heath** (432) — Dabœcia (Menzièsia) polifòlia.

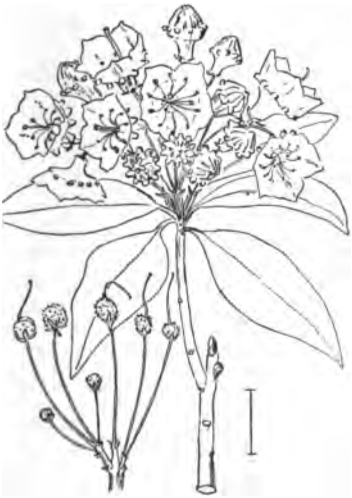


Fig. 433. — Mountain 'Laurel.'

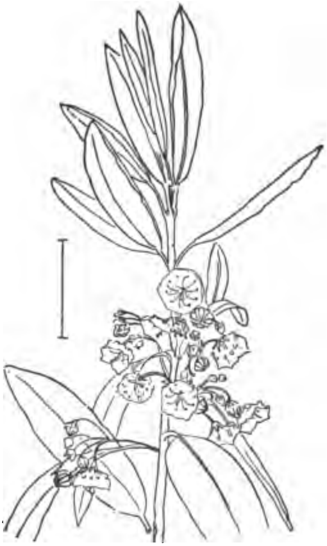


Fig. 434. — Sheep 'Laurel.'

Kálmia. The Kalmias or American 'Laurels' are among the most beautiful shrubs in cultivation. About all are hardy throughout and should be cultivated much more generally than they are. The special peculiarities of the Kalmias are in the flowers, which are cup-shaped with ten hollows in which the anthers are held till released by the action of insects. The leaves are entire, and alternate, opposite, or whorled in arrangement on the stem.

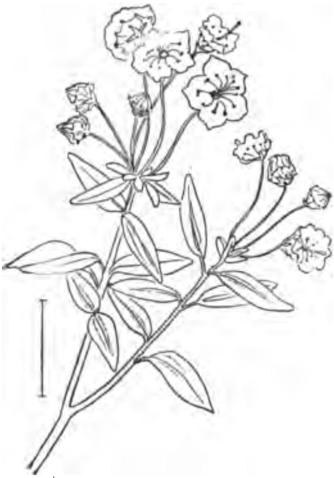


Fig. 435. — Pale Kalmia.

So many evergreen plants, of many families, both in America and Europe are called laurels that it would be better to drop it as a name unless some distinctive modifier can fix upon the plant intended. "The flower of Kalmia is one of those proposed as a national flower emblem, especially on account of the exquisite symmetrical beauty of the single flower." Kalmia is a purely American genus and deserves a distinctive name. The best plan would be to always call these American plants Kalmias. They are less particular about soil and position than the hardy Rhododendron, growing well in sandy and loamy soils and especially thriving in damp shady places.

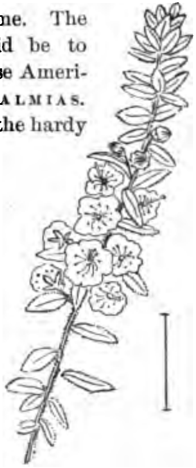


Fig. 436. — Hairy Kalmia.

Broad-leaved Kalmia, Mountain 'Laurel,' or Calico Bush (433) — Kalmia latifòlia — is generally a shrub 4 to 10 feet high, though sometimes a tree to 30 feet, with a rounded head and evergreen, alternate (or irregularly whorled), entire, glossy leaves 3–4 inches long. The flowers are white or rose-colored in large terminal clusters, May and June. The individual flowers are about ¾ inch broad.

Narrow-leaved Kalmia, Sheep 'Laurel,' Lambkill or Wicky (434)—Kálmia angustifòlia—is a low shrub, 1 to 3 feet high, with usually narrow evergreen, opposite (or whorled in threes) leaves 1 to 2½ inches long. The flowers are of many shades of red to purple in lateral clusters, June and July. The individual flowers are nearly ½ inch broad.

Pale Kalmia, Pale or Swamp 'Laurel' (435) — **Kalmia glaùca** or **polifòlia** — is a small shrub 1 to 2 feet high with 2-edged stems, opposite or whorled evergreen leaves ½ to 2 inches long, white beneath with a bloom which can be rubbed off; these leaves have rolled edges. The flowers are on slender stems, red or purplish in color, in terminal clusters (umbels) in summer and range from ½ to ¾ inch broad.

Hairy Kalmia or 'Laurel' (436) — **Kalmia hirsùta** — is a branching shrub 1 to 2 feet high with alternate evergreen small leaves, ¼ to ½ inch long. Both leaves and stems are covered with hairs. The flowers, ½ to ¾ inch broad, are usually solitary in the axils of the leaves, rose-purple in color.

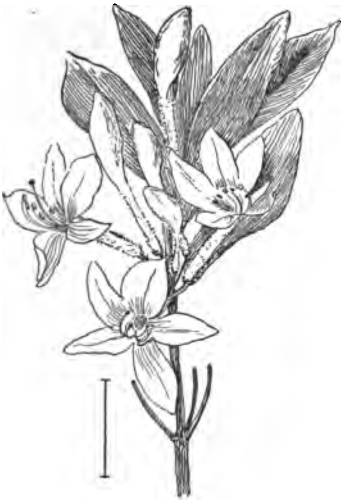


Fig. 437. — White Swamp Azalea.

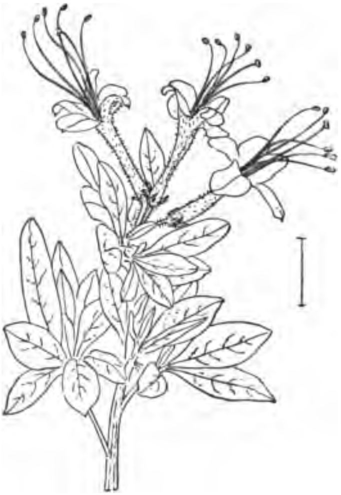


Fig. 438. — Smooth Azalea.

Deciduous-leaved Kalmia or White Wicky — **Kalmia cuneàta** — is a low shrub with deciduous mostly alternate wedge-shaped leaves ¾ to 2 inches long. The flowers are in small lateral clusters, white or pinkish in color, about ½ inch broad, in spring.

The last two species are probably hardy only in the middle states and in the South and are the least ornamental of any of the Kalmias. [Seeds.]

Azàlea. The Azaleas are among the most interesting of flowering shrubs. In the size and abundance of bloom and in the brightness and variety of coloring there is hardly anything in the vegetable kingdom which can equal the beauty of this group of plants. Some species are

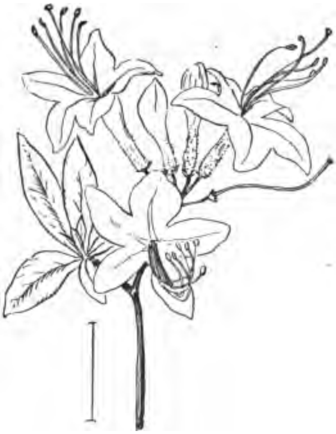


FIG. 439. — Pinxter Flower.

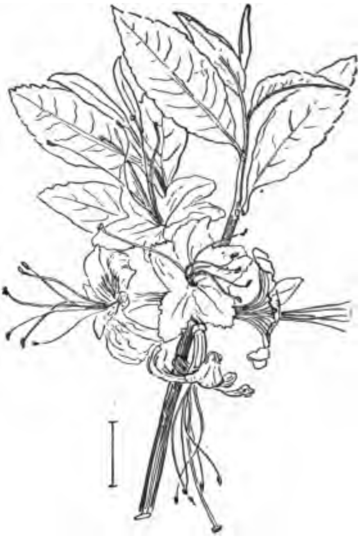


FIG. 440. — Flame Azalea.

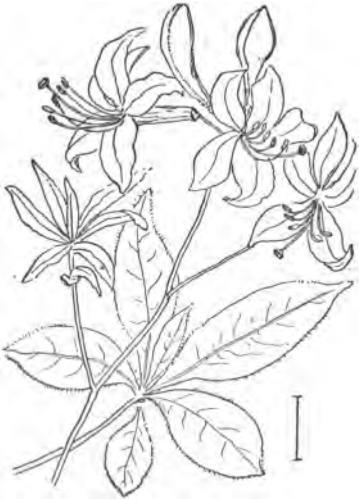


FIG. 441. — Pontic Azalea.

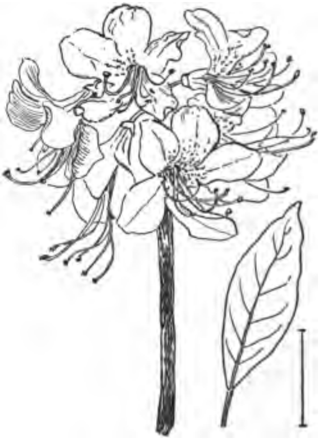


FIG. 442. — Vasey's Azalea.

hardy in the extreme North, many others are hardy only in the Gulf states. Besides the regular species there are numerous hybrids intermediate in character, and some have flowers so double in form and variegated in color as to disguise their character to the extent that they hardly seem Azaleas. Like the roses, there are so many named varieties as to defy description except in a large book devoted to them alone and furnished with colored illustrations.

The leaves are alternate or clustered at end of branches, entire or bristly-toothed and generally deciduous. The flowers when single are funnel-shaped, somewhat lopsided, with 5 or 10 usually long stamens. The fruit is a large 5-valved many-seeded capsule. They grow best in peaty or sandy soil in moist and somewhat shady situations.

[Twig cuttings; layers; seeds; grafting of named varieties on seedlings of hardy species.]

KEY TO MANY OF THE AZALEAS

- * Leaves and flowers from different buds, flowers in terminal clusters, leaves deciduous. (**A.**)
  - **A.** Corolla with a slender tube about as long as the spreading portion, hairy and glandular outside, stamens (5) longer than the lobes. (**B.**)
    - **B.** Flowers white (or tinged red) blooming after the leaves expand, very fragrant. (**C.**)
      - **C.** Flowers 1½–2 inches long, very sticky or gummy outside, June, July; branchlets with stiff hairs; shrub 4–8 feet. White Swamp Azalea (437) — Rhododéndron viscòsum (Azalea viscòsa).
      - **C.** Flowers 2 inches long, June, July; branchlets about smooth; shrub 8–10 feet high; style and stamens red. Smooth Azaleas (438) — Rhododéndron arboréscens (Azalea arboréscens).
      - **C.** Flowers 2–2½ inches long with yellow on the upper lobe, May, June; branchlets generally smooth; shrub 2–6 feet. California Azalea — Azalea occidentàlis (Rhododéndron occidentàle).
    - **B.** Flowers usually pink though sometimes nearly white, blooming early, about when the leaves expand, April, May, slightly fragrant; shrub 3–6 feet. Pink Azalea or Pinxter Flower (439) — Rhododéndron nudiflòrum (Azalea nudiflòra).
    - **B.** Flowers yellow, orange, or flame color. (**D.**)
      - **D.** Orange to flame color, nearly 2 inches broad, without odor

or nearly so, May, June, stamens thickened near the middle; shrub 4–10 feet. Flame Azalea (440) — Rhododéndron calendulàceum (Azalea calendulàcea).

D. Yellow and very fragrant, 2–2½ inches broad, May; branchlets hairy; shrub 2–6 feet. Rare in cultivation but hybrids have been given the name. Pontic Azalea (441) — Azalea póntica.

B. Flowers white, yellow, orange, pink, red, lilac, etc., blooming May–July. Hybrid or Ghent Azaleas — Azalea gandavénsis.

A. Corolla with a broader tube which is pubescent but not glandular outside, stamens (5) shorter than the spreading portion, flowers yellow, orange, or pink blooming at time of leaf expansion, April, May; branches hairy. Shrub 3–8 feet. Chinese Azalea — Azalea sinénsis (Rhododéndron sinénse).

A. Corolla with a short tube and broadly spreading border, rose-purple without spots, smooth outside, stamens 10, blooming before the leaves, April, May. (**E.**)

E. Shrub 1–3 feet; leaves glaucous beneath. Rhodora — Rhododendron canadénse (Azalea canadénsis).

E. Shrub 3–8 feet; leaves yellowish beneath. Rhombic-leaved Azalea — Azalea rhómbica (Rhododendron rhombícum).

A. Corolla with a short tube, broadly spreading border and upper lobes spotted. (**F.**)

F. Stamens usually 7 (rarely 5); bloom before leaves; shrub 5–15 feet. Vasey's Azalea (442) — Azalea Vàseyi (Rhododendron Vàseyi).

F. Stamens 10; blooming with the leaves; shrub 2–5 feet; branches glandular-hairy. (**G.**)

G. Flowers purple. Azalea (Rhododendron) Albréchtii.

G. Flowers pale rose color with brownish spots. Azalea Schlippénbachii.

* Leaves and flowers from the same terminal bud; leaves thick and generally evergreen; stamens 5–10. Shrub 1–8 feet. Evergreen Azalea — Azalea índica (Rhododendron índicum) — and its many named varieties and hybrids.

Rhododéndron. The Rhododendrons are among the most beautiful of flowering evergreens. In spring and early summer, when in bloom, the bushes, entirely covered with great heads of the large bright colored flowers and, through the year, the large thick glossy foliage render the Rhododendrons objects of great beauty. There are three or four species from which the endless hybrids have been obtained. One of these is from

India, TREE 'LAUREL' (443) — Rhododendron arbòreum, — another from Asia Minor, PONTIC RHODODENDRON (444) — Rhódodendron pónticum, — and two are from America, CATAWBA RHODODENDRON (445) — Rhododendron catawbiénse — and GREAT 'LAUREL' (446) — Rhododéndron maximum. The leaves are alternate, often clustered at ends of branches, usually large, thick and leathery. The flowers are large bell-shaped and somewhat irregularly 5-lobed. The stamens are usually 10 and slightly projecting from the corolla. The fruit is a usually large capsule splitting into 5 or 10 valves and with many minute seeds. The terminal buds in winter are large and many-scaled. The plants are generally from 4 to 8 feet high, though a number of alpine and northern species reach only to the height of 1 to 3 feet, while some Himalayan species grow to the height of 30 to 60 feet.

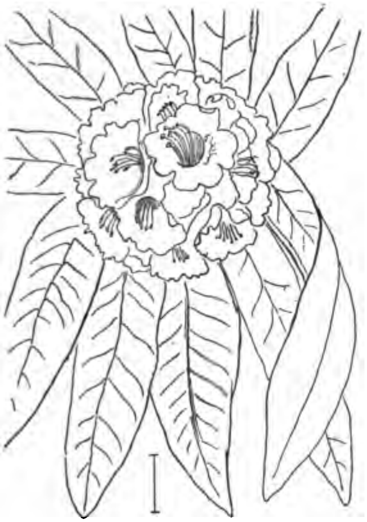


FIG. 443. — Tree 'Laurel.'

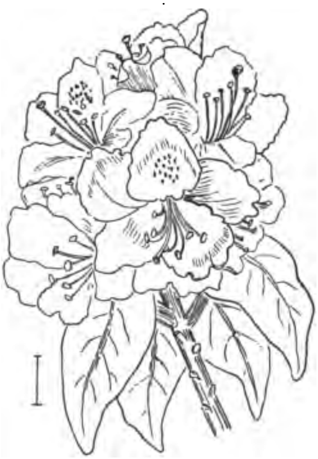


FIG. 444. — Pontic Rhododendron.

A soil free from clay or lime is found best for Rhododendrons and a slightly shaded position is natural for many species. The soil should be well drained but watering is necessary in our dry summers.

The Rhododendrons vie with the roses in the endless number of species and hybrids. Though there have been many attempts, no book has made practical the distinction of the varieties. A few American wild species and one from Asia are here described.

Our northern wild species, GREAT 'LAUREL' (446) — Rhododendron máximum, — grows from 6 to 20 (occasionally 40) feet high. It has pale rose to nearly white flowers an inch broad with some greenish in the throat and reddish or yellowish spots on the upper side. It blooms July and August.

The Alleghanian species, **Catawba Rhododendron** (445) — Rhododendron catawbiènse, — grows usually from 3 to 6 (occasionally 20) feet high. It has lilac-purple flowers 1½ inches broad and blooms in June.

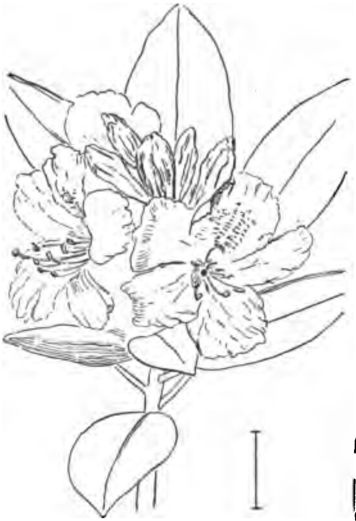


Fig. 445. — Catawba Rhododendron.

The **Californian Rhododendron** — Rhododendron califórnicum — grows about 8 (rarely 20) feet high. It has pink or purple flowers with the lobes more frilled or crisped than the above.

The species so far given are all rather tall and without scurfy scales on the lower sides of the leaves. A small American species, **Dotted-leaved Rhododendron** (447) — Rhododendron punctàtum, — rarely grows more than 5 feet high and has small leaves 2 to 5 inches long with glandular hairs and scales on the lower sides. The flowers are in small clusters more funnel-shaped, pale rose with greenish spots.

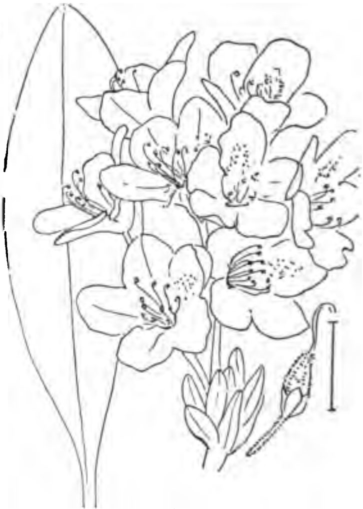


Fig. 446. — Great 'Laurel.'

All the above have flowers in clusters from large buds and fully evergreen leaves. There are species from eastern Asia where each flower is from a separate bud and the leaves are only half evergreen. They are the earliest to bloom, March to April. Probably the commonest of these is **Dahurian Rhododendron** (448) — Rhododendron dahùri-

cum (R. daùricum),— with small leaves rolled at the edges and brownish beneath.

[Seeds; twig cuttings; layers; grafting of varieties on seedlings of hardy species.]

Lèdum. The LABRADOR TEAS are erect branching shrubs with alternate evergreen narrow entire, rolled-edged, fragrant leaves. The small white 5-petaled flowers are in terminal clusters, umbels, in early summer. There are two species: NARROW-LEAVED LABRADOR TEA (449) — Lèdum palústre, — with leaves less than ¼ inch wide and 10 stamens to the flowers; BROAD-LEAVED LABRADOR TEA (450) — Ledum grœnlándicum (L. latifòlium), — with leaves ¼ to ¾ inch wide and 5 to 10 stamens. The flowers of both species are from ⅓ to ½ inch wide and the 5-celled capsules are nodding, about ¼ inch long, and contain many minute seeds. Neither of these plants reaches the height of over 3 feet, but the broad-leaved one is somewhat the taller. There is a taller California species, GLANDULAR LABRADOR TEA (451) — Ledum glandulòsum, — but probably not in cultivation.

[Seeds; layers; divisions.]

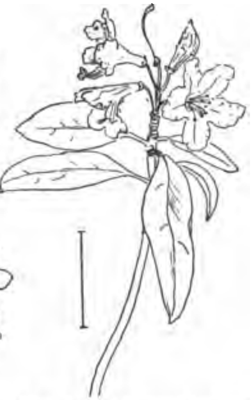


FIG. 447. — Dotted-leaved Rhododendron.

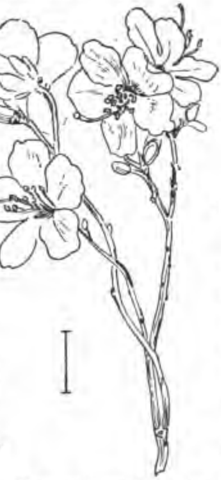


FIG. 448. — Dahurian Rhododendron.

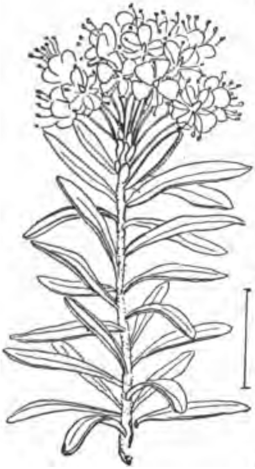


FIG. 449. — Narrow-leaved Labrador Tea.

Leiophỳllum (Déndrium) buxifòlium. SAND 'MYRTLE' (452) is a hardy small, 1 to 3 feet, densely branched evergreen shrub similar to the Ledums, with small thick oval rolled-edged leaves (½ inch long). The 5-petaled flowers are only about ¼ inch

broad, white or pinkish in color, with 10 purple anthers to the stamens, April to June. The seed pod (capsule) is small, erect, 5-valved, many-seeded. To thrive it needs a sandy soil but grows well in either shade or sun. Good for rockeries or as a border plant.

[Seeds; layers, in autumn.]

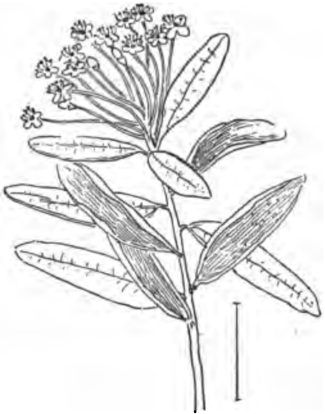


Fig. 450. — Broad-leaved Labrador Tea.

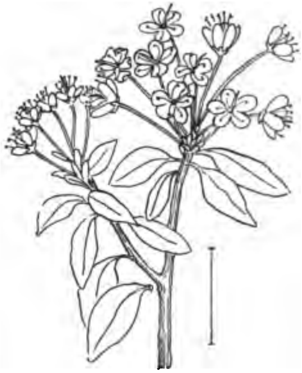


Fig. 451. — Glandular Labrador Tea.

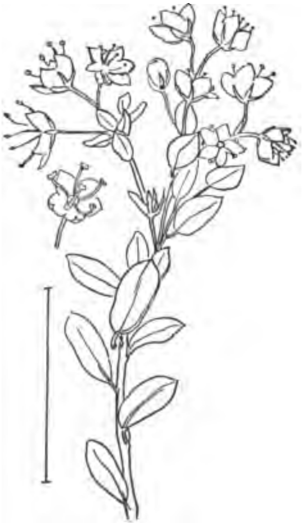


Fig. 452. — Sand Myrtle.

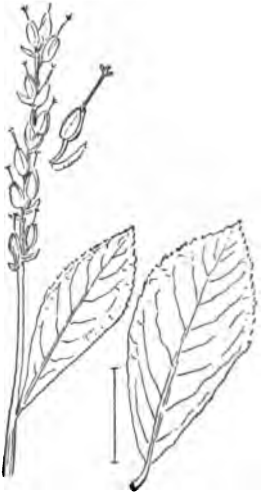


Fig. 453. — Sweet Clethra.

Clèthra. The Clethras or SWEET PEPPERBUSHES are beautiful sweet-scented shrubs with white flowers in terminal slender erect, or slightly nodding, clusters in late summer and fall. The leaves are alternate, sharp-pointed, feather-veined and serrated. The flowers have the 5 petals slightly united at base and 10 stamens. The fruit is a 3-angled 3-valved capsule with numerous seeds, remaining on through the year.

The best and most hardy species, 3 to 10 feet high, SWEET CLETHRA or SWEET PEPPERBUSH (453) — **Clèthra alnifòlia,** — has the leaves wedge-shaped at base and widest beyond the middle. The next in hardiness is found wild from Virginia south, SOUTHERN CLETHRA or MOUNTAIN PEPPERBUSH — Clethra acuminata, — a taller plant, to 15 feet, with larger leaves, 2 to 7 inches long, widest about the middle and the flowers more nodding and more hairy. Besides these two Sweet Pepperbushes there are other and more tender species found wild in the Gulf states and Mexico which might be, but probably are not yet, in cultivation. The tallest species, to 30 feet, is from eastern Asia, PHILIPPINE CLETHRA — Clethra canéscens; it has such compound clusters as alnifòlia but is probably not hardy North. [Seeds; twig cuttings; layers; divisions.]

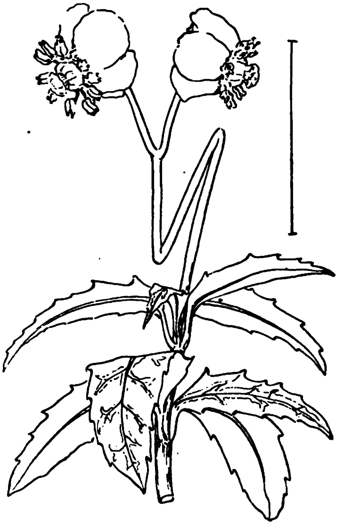


FIG. 454. — Spotted Wintergreen.

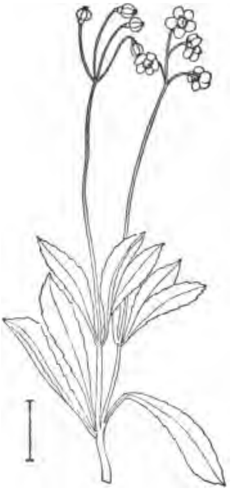


FIG. 455. — Pipsissewa.

Chimáphila and Pýrola. The WINTERGREENS and PIPSISSEWAS are woody plants hardly tall enough to be included in a book of shrubs, but

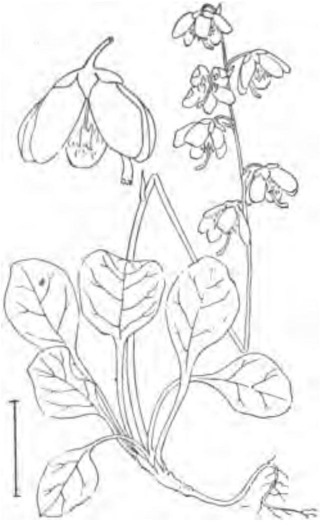


FIG. 456. — Greenish-flowered Wintergreen.

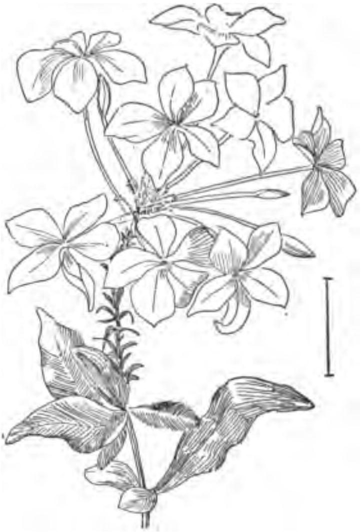


FIG. 457. — Cape Plumbago.

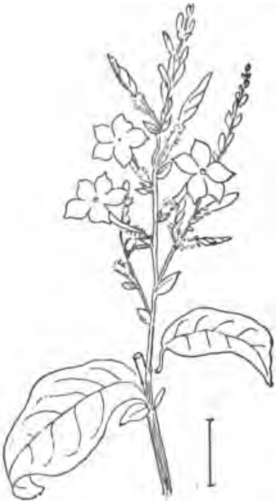


FIG. 458. — Rosy Plumbago.

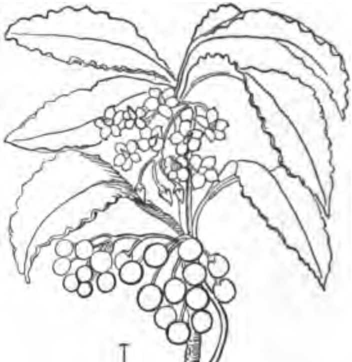


FIG. 459. — Red-berried Ardisia.

some have such beauty of evergreen foliage and of blossom as to induce me to mention and figure them. The one with the most beautiful foliage is the **Spotted Wintergreen** (454) — Chimaphila maculàta, — with notched dark green leaves mottled with white along the veins. A slightly taller plant with similar flowers but with unmottled bright green leaves is the **Pipsissewa** (455) — Chimaphila umbellàta. Still other wintergreens are occasionally cultivated belonging to the genus Pyrola; they are practically stemless plants with clusters of nodding flowers on stalks 4 to 20 inches tall. All form 5-valved many-seeded pods. Two of these Pyrola wintergreens worthy of mention are **Round-leaved Wintergreen** — Pyrola americàna — and **Greenish-flowered Wintergreen** (456) — Pyrola chlorántha. The Pyrolas and Chimaphilas are difficult to cultivate and succeed only in shady places in peaty soil. When removing

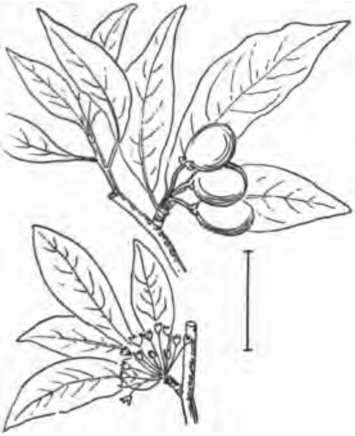


Fig. 460. — Southern Buckthorn.

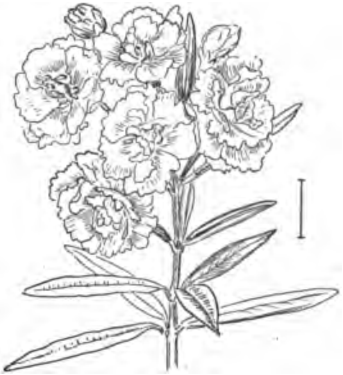


Fig. 461. — Oleander.

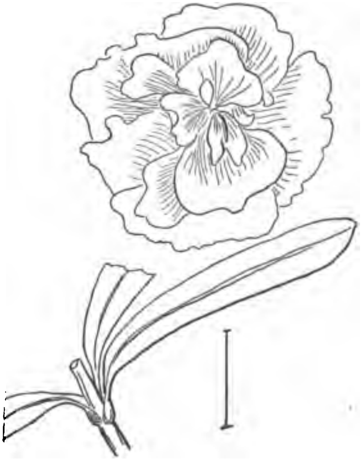


Fig. 462. — Sweet-scented Oleander.

them from the woods, where found, care should be taken to secure a large ball of earth. [Divisions.]

Plumbàgo. The PLUMBAGOS are generally blue or violet-colored flowering plants hardy only South but often cultivated outdoors North in summer. The flowers have a slender tube and broadly spreading 5-lobed border, salver-shaped, growing in terminal clusters. The leaves are simple, entire-edged, smooth, usually in alternate clusters along the stems. This clustering of the leaves and the slender-tubed flowers will separate the Plumbagos from other shrubs. The different varieties of shrubby forms have blue, violet, rose, and white flowers blooming continuously from spring to fall in the North. All the species are more or less climbing in habit; they show this especially in the extreme South where they are hardy. The fruit is a thin-coated one-seeded pod. The one species in most general cultivation has azure-blue flowers, except in the white variety, and blunt-tipped tapering-based leaves, CAPE PLUMBAGO (457) — Plumbago capénsis, — from South Africa. Another species, with red flowers, from South Asia, ROSY PLUMBAGO (458) — Plumbago roseà, — has larger leaves somewhat clasping at base. [Twig cuttings.]

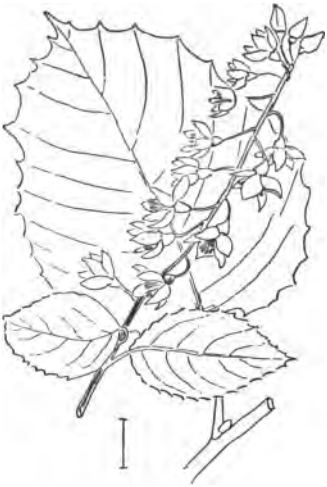


FIG. 463. — Broad-leaved Storax.

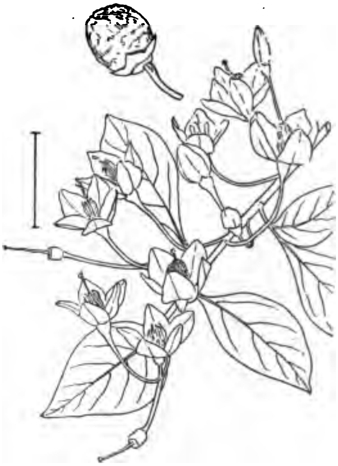


FIG. 464. — Japanese Storax.

Ardísia. This is a large genus of tropic trees and shrubs with thick evergreen leaves; one of these is hardy in the extreme South and another probably hardy farther north. They have small broadly spreading 4- to 6-parted flowers and 1-seeded berry-like drupes which remain on the plants over a year.

Red-berried Ardisia (459) — Ardisia crenulàta — is a neat compact shrub with peculiar wavy-margined alternate leaves and drooping clusters of very ornamental coral-red, berry-like drupes which hang on for a year or more. The small flowers are red or rose-colored.

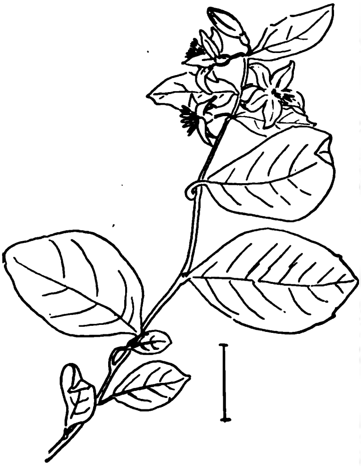


Fig. 465. — American Storax.

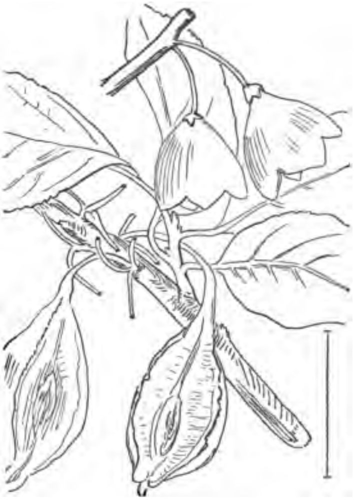


Fig. 466. — Four-winged Silver Bell.

White-berried Ardisia — Ardisia japónica — has whorled serrated leaves, white flowers on red stems, and drooping white berry-like drupes. While more hardy than the former, it is not nearly so beautiful. [Seeds.]

Bumèlia. The Bumelias are popularly called Buckthorns and are thorny shrubs or trees with alternate clustered entire-edged nearly or quite evergreen leaves. This genus contains no species of any great ornamental value and is rarely found in cultivation. The species most frequently met with, False Buckthorn — Bumelia lanuginòsa, — has densely hairy evergreen leaves 1 to 2½ inches long. The fruit is a black berry nearly ½ inch long usually with one shining seed. The flowers are minute, white, clustered in the axils of the leaves in summer. This, though usually shrubby, can grow to the height of 50 feet. Southern Buckthorn (460) — Bumelia lycioides — differs in having less hairy, thinner, more veiny, deciduous leaves. These are the only species which can be cultivated north to Massachusetts, and even these need protection. [Seeds.]

Nèrium. The OLEANDERS have been very popular in the past as tub plants North and hardy plants in the extreme South. They are so well known that a full description is scarcely necessary. The leaves are evergreen, long, slender, entire, opposite or in whorls of 3's or 4's. The flowers are salver-shaped, an inch or more broad and often double, blooming through the whole summer. There are many colors, white, light pink, dark pink, scarlet, and buff. When grown outdoors, they reach the height of 15 feet. The difficulty in their culture is due to scale insects which prefer Oleanders to almost any other plants. The common OLEANDER (461) — Nerium Oleánder — is without odor to the flowers. There is SWEET-SCENTED OLEANDER (462) — Nerium odòrum, — which does not grow so tall. [Twig cuttings.]

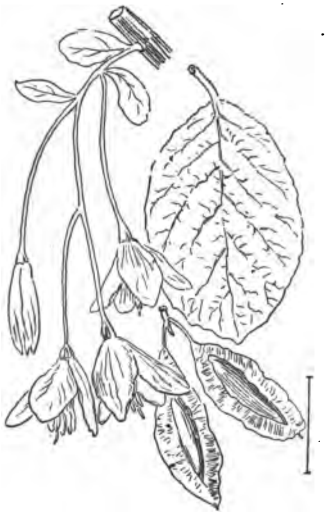


FIG. 467. — Two-winged Silver Bell.

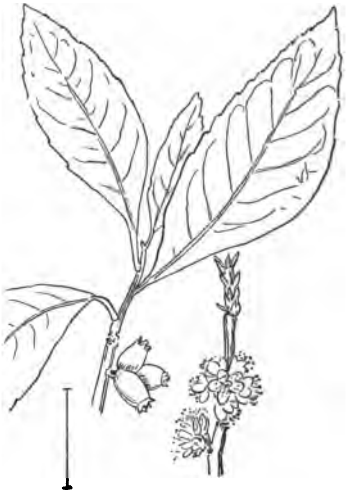


FIG. 468. — Sweet-leaf.

Stỳrax. This is a large group, 70 species, of mainly tropic trees and shrubs. A few are both hardy and beautiful enough to be in cultivation in the United States. There are several wild American species. The first three below are hardy, if somewhat protected, north to Massachusetts; the fourth, to Philadelphia; the last, only South. They all have alternate simple usually notched leaves, and clustered drooping somewhat bell-shaped white flowers. The petals are somewhat united at base. The fruit is a one- or two-sided dry drupe ¼ to nearly 1 inch long in the different species. All the species are loose and spreading in habit.

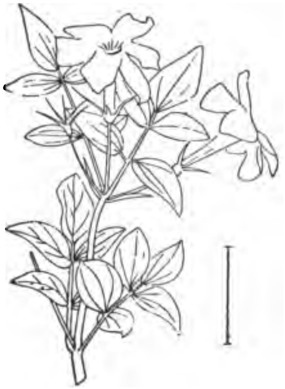


Fig. 469. — Common White Jasmine.

Broad-leaved Storax (463) — **Styrax Obássia** — has broad rounded abruptly sharp-pointed leaves 6 to 10 inches long with coarse notches beyond the middle. The fragrant drooping flowers are ¾ inch long in clusters 5 to 7 inches long, May. The pointed fruit is ¾ inch long.

Japanese Storax (464) — **Styrax japónica** — has smaller leaves, 1 to 3 inches, and the smaller flowers, ½ inch long, are in fewer (3- to 6-) flowered clusters, June, July. Both of these species from Japan form occasionally small trees growing to the height of 30 feet. The other species, given below, are only shrubs usually less than 8 feet high.

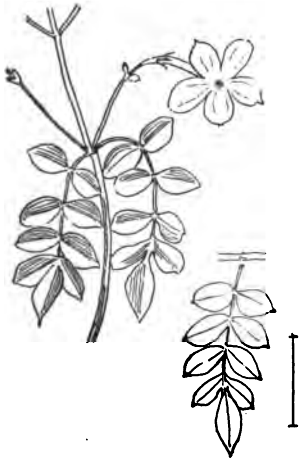


Fig. 470. — Royal Jasmine.

American Storax (465) — **Styrax americàna** — has small, 1 to 3 inches long, slightly notched smooth leaves and often solitary flowers in the axils, April to June. The rounded fruit is only about ¼ inch in size.

Large-leaved American Storax — **Styrax grandifòlia** — has large leaves, 2 to 6 inches long, with the lower surface light colored and velvety with hairs, and the fragrant flowers in loose clusters 3 to 6 inches long, May; the individual flowers are fully ½ inch long with broadly spreading petals.

California Storax — **Styrax califórnica.** The species so far described have their petals almost always 5 in number, but this California species has 5 to 8 narrow petals forming blossoms ¾ inch long, April. The leaves are usually notched in the other species, but this has small, 1 to 2½ inches long, entire-edged leaves.

[Fresh seeds; layers.]

Halèsia (Mohrodéndron). The Silver Bells or Snowdrop Trees are large shrubs or small trees with beautiful white bell-like hanging flowers with 4 lobes, in spring before the leaves are fully expanded. They grow well in the shade, but are not fully hardy north of Philadelphia except with some protection. The hardiest species is the first one given below; there are but three species, all American. The fruit is elongated, ridged, dry, 1- to 3-seeded; the leaves are simple, alternate, deciduous, feather-veined, notched.

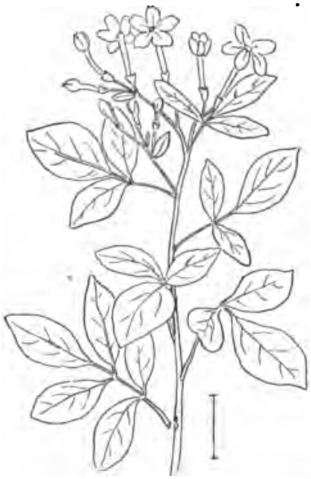


Fig. 471. — Sweet Yellow Jasmine.

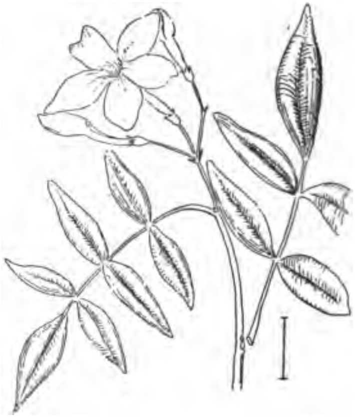


Fig. 472. — Italian Yellow Jasmine.

Four-winged Silver Bell, Snowdrop Tree, or Opossum Wood (466) — Halesia carolìna (H. tetraptera, Mohrodendron carolìnum). Fruit 4-ridged or winged (1½–2 inches long), the ridges not extending down the stalk. Flowers about an inch long. Leaves 2 to 7 inches long, oval, finely notched. This is the largest, most hardy, and most tree-like species, reaching the height of 50 feet or more.

Two-winged Silver Bell (467) — Halesia díptera. Fruit 2-winged (1½–2 inches long), the ridges or wings extending down the stalk. Flowers about an inch long. Leaves somewhat larger and more coarsely notched. A smaller and less hardy tree, seldom over 20 feet, usually a shrub.

Small-flowered Silver Bell — Halesia parviflòra. Always shrubby with flowers less than ½ inch long and 2-winged fruit like the last but only about an inch long.

Meehan's Silver Bell — Halesia carolìna Meèhani — is a variety of the first, above, with thicker leaves and more erect and bushy growth which seemingly does not produce good seeds and is propagated only by grafting on the same, H. carolina. [Fresh seeds (except Meehan's).]

Sýmplocos, Sweet-leaf. These constitute a large group, 150 species, of mainly tropic trees with alternate simple thick usually evergreen leaves; generally white, 5-lobed flowers in clusters and berry-like black, red, or blue fruit. Only one species (possibly two) is either shrubby, hardy, or beautiful enough to need description here.

Himalayan Sweet-leaf — Symplocos cratægoides, — 3 to 40 feet, has obovate leaves 1 to 2½ inches long, closely notched towards the tip and compound clusters, panicles (2–5 inches long), of small white fragrant flowers, May, June. The dry drupes ripen in September and last through the fall and winter, are bright blue in color and constitute the most beautiful feature of the plants.

An American species, Sweet-leaf, Horse Sugar (468) — Symplocos tinctòria — to 18 feet, is almost evergreen with orange-brown fruit; the leaves are nearly entire, 4 to 6 inches long; the flowers yellow, small, fragrant in dense clusters, April; the fruit ripe in September.
[Seeds, needing 2 years to grow; twig cuttings.]

Jásminum. The true Jasmines are popular shrubs and vines of easy culture, with white or yellow sweet-scented flowers. The corolla has a long tube and a spreading 4- to 9-lobed border. The leaves are either opposite or alternate and generally compound (odd-pinnate) of 3 to 9 blades (some of the climbing species have but 1 blade, and thus apparently have simple leaves). Most of the species need support even if not specially climbing in habit. Only the diffuse-growing and thus bushy jasmines are here given. Hardy only South, though two species, J. officinàle and J. nudiflòrum, can be grown successfully north to Washington and, with protection, to Philadelphia and New York. The fruit is 2-celled, 2-seeded, 2-lobed, a twin berry. [Twig cuttings; layers.]

KEY TO THE SPECIES OF JASMINUM

* Flowers white; leaves opposite and compound. (**A.**)

A. Leaves glossy, 5–7-bladed; stems grooved; flowers very fragrant in terminal clusters, in summer. This is the Jessamine or Jasmine of the poets. Common White Jasmine or Jessamine (469) — Jasminum officinàle.

A Leaves glossy, 7–9-bladed with about 3 of the end blades partially grown together; branches angular and drooping; flowers larger than the last and apt to be tinged with red outside, summer to fall. Indian or Royal Jasmine (470) (called by many names) — Jasminum grandiflòrum.

* Flowers yellow ; leaves alternate and compound. (**B.**)

B. Leaves glossy with 3–5 blunt blades ; branches nearly round and stiff ; flowers in small terminal clusters, summer. Common Sweet Yellow Jasmine (471) — Jasminum odoratíssimum.

B. Leaves thick, evergreen with 3–7 acute blades (rarely 1 blade), edges more or less rolled ; flowers bright in open clusters, summer and fall. Italian Yellow Jasmine (472) — Jasminum hùmile.

* Flowers yellow ; leaves opposite, deciduous, of 3 rounded blades ; branches green, 4-angled, stiff, twiggy. Where hardy, Washington and South, it blooms well through most of the winter. Naked-flowered Jasmine — Jasminum nudiflòrum.

Forsýthia. The Forsythias or Golden Bells are very ornamental early-flowering hardy deciduous shrubs which burst into bloom as the winter is leaving, the bright yellow bell- or star-shaped flowers fairly cover the naked branches before the hard frosts are over. The corolla has four long slender lobes.

The tallest and most erect growing species, Erect Forsythia (473) — Forsythia viridíssima, — to 10 feet, has always simple, narrow, dark green leaves with sharp notches from the center to the tip and somewhat 4-sided green branches with the pith in plaits.

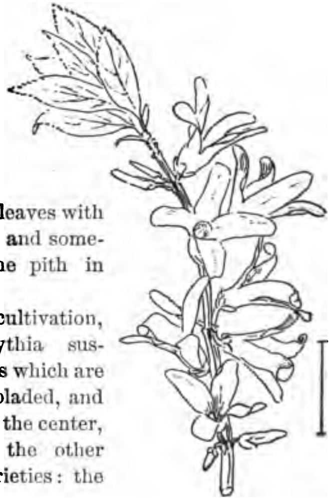


Fig. 473. — Erect Forsythia.

The other species in common cultivation, Weeping Forsythia (474) — Forsythia suspénsa, — has broader and shorter leaves which are frequently 3-lobed and occasionally 3-bladed, and weak almost trailing branches hollow in the center, instead of with the plaited pith of the other species. This has two well-marked varieties : the trailing variety is called Siebold's Forsythia — Forsythia Sièboldi ; the more erect and vigorous growing variety with many 3-bladed leaves is Fortune's Forsythia — Forsythia Fortùnei. The first, Forsythia Sièboldi, is well fitted to trail over arbors or fences, as its slender branches grow 12 feet or more in length.

There is a hybrid of the two species with arching or erect branches, the leaves much like F. viridíssima though occasionally 3-lobed or 3-bladed, the flowers like F. Fórtunei, HYBRID FORSYTHIA — Forsythia intermèdia.

A species from Europe with small entire-edged leaves, EUROPEAN FORSYTHIA (475) — Forsythia europæ̀a, — may be in cultivation.

[Twig cuttings; seeds.]

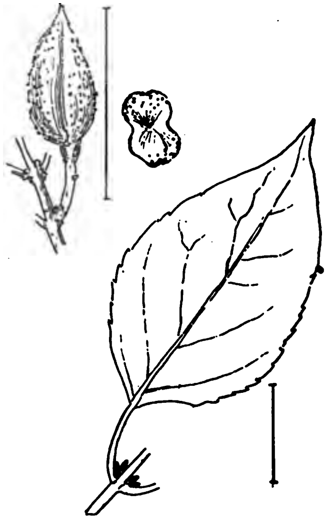


FIG. 474. — Weeping Forsythia.

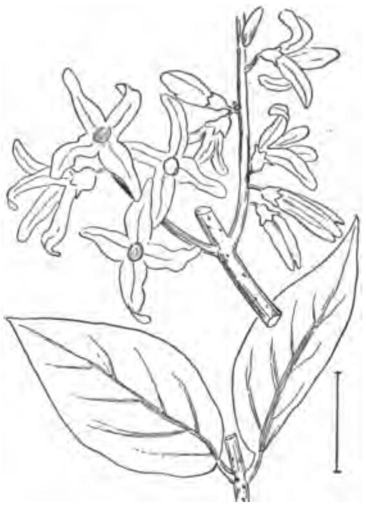


FIG. 475. — European Forsythia.

Syrínga. The LILACS are among the most popular groups of hardy shrubs in cultivation. (It is very unfortunate that Linnæus, the father of modern botany, did not leave the name Syringa where it belonged, with what he called Philadélphus. He it is who gave the name Syringa to the lilacs, although long usage still makes the name cling to the white 4-petaled flowers, his Philadelphus.) The Lilacs came from Asia, and were introduced into America at about the time of its first settlement by the Whites. There are about a dozen species in cultivation with scores of named varieties, including a number of hybrids. The color-word, lilac, indicates the general color of the flowers but, by cultivation, all shades and tints of lilac are found, in one direction towards red, in another towards blue, and in a third towards white. There are three species which have so nearly white flowers that they have been called privets, mainly because of this color of blossoms; the difference between

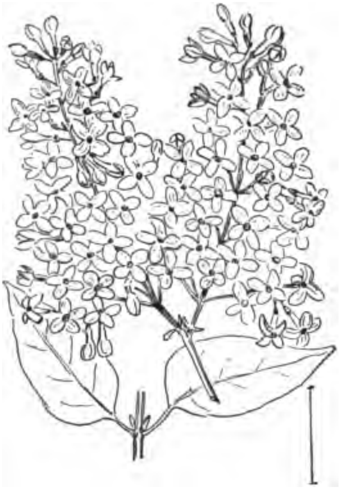


FIG. 476. — Persian Lilac.

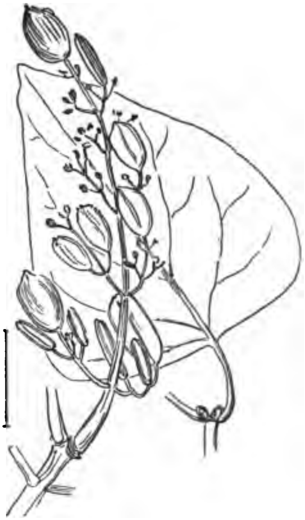


FIG. 477. — Common Lilac.

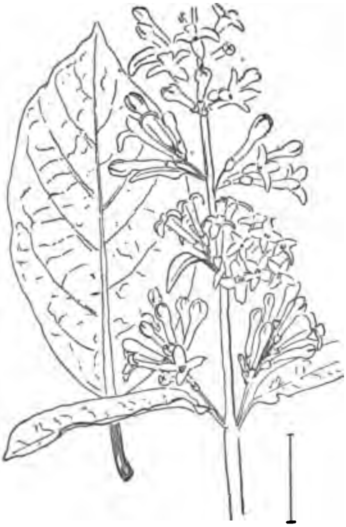


FIG. 478. — Himalayan Lilac.

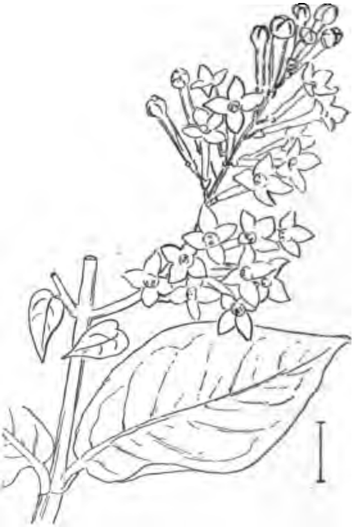


FIG. 479. — Thick-leaved Lilac.

these two closely related groups of plants is in the fruit; lilacs form rather large, ½ inch or more long, 2-valved, often flattened, few-seeded capsules, while privets form rounded 1- to 3-seeded berries. All lilacs have opposite entire-edged leaves (except the Persian, which in one variety has lobed leaves).

The violet-colored lilacs in cultivation have the two stamens almost within the tube so that they show where the spreading border begins.

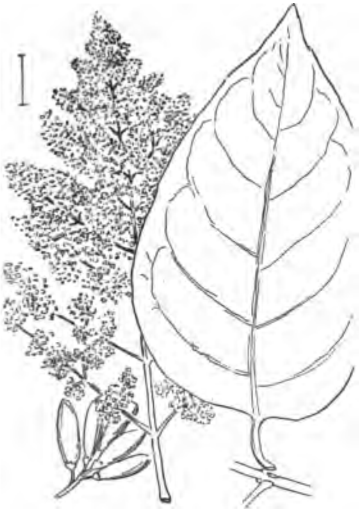


Fig. 480. — Japan Tree Lilac.

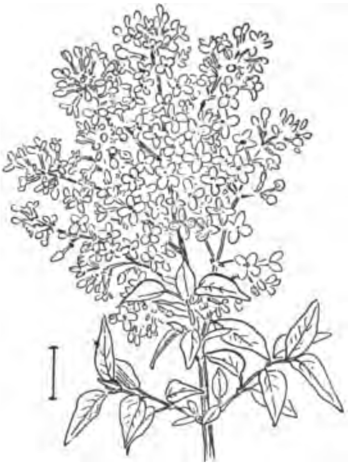


Fig. 481. — Rouen Lilac.

The yellowish-white (privet) lilacs have longer stamens projecting beyond the tube. The violet-colored lilacs have larger flowers with comparatively longer tubes. These differences must be known, as there are white varieties of several of the other species.

The smallest and narrowest leaves and the only lilac with notched leaves is found on Persian Lilac (476) — Syringa pérsica. The one with leaves next in size, Rouen Lilac — Syringa chinénsis, — belongs to a hybrid of this species and the Common Lilac (477) — Syringa vulgàris. The Rouen lilac has a number of varieties differing mainly in the color of the flowers: white flowers, álba; pale purplish, Meténsis; purplish-red, Sougeàna; double flowers, dùplex.

Many species and varieties have the characteristic lilac leaves, with a broad, nearly square base, tapering sides, and a sharp point. The

Privet Lilacs, with rather creamy flowers, have oval leaves, and in the case of the TREE LILAC they are very large — often 6 or 7 inches long.
[Seeds; suckers; divisions; twig cuttings.]

KEY TO THE LILACS

* True Lilacs, with the larger flowers, longer tube (much longer than the border), and short stamens hardly projecting beyond the corolla. (**A**).

- **A**. Clusters of flowers with leaves at base; leaves whitish beneath and acute at both ends, edge of leaves with fine hairs; branches round. (**B**.)
  - **B**. Stamens attached near middle of tube; clusters narrow, blooming late, June. HUNGARIAN LILAC — Syringa Josikæa.
  - **B**. Stamens attached near upper end of tube. HIMALAYAN LILAC (478) — Syringa villòsa.
- **A**. Clusters of flowers without leaves at base, growing from lateral buds, the terminal bud suppressed. (**C**.)
  - **C**. End of anthers not reaching the mouth of the very slender tube; leaves dark green above, grayish green below, 1–3 inches long. SMALL TINGHIANG — Syringa pubéscens.
  - **C**. Anthers longer, tube broader. (**D**.)
    - **D**. Leaves green and smooth on both sides, square or cordate at base. (**E**.)
      - **E**. Leaves almost reniform, often broader than long. Earliest Lilac to bloom, May. THICK-LEAVED LILAC (479) — Syringa oblàta.
      - **E**. Leaves ovate, very variable; many named varieties. COMMON LILAC (477) — Syringa vulgàris.
    - **D**. Leaves narrowed at base, 1½–4 inches long. (**F**.)
      - **F**. Leaves over half as wide as long. ROUEN LILAC (481) — Syringa chinénsis.
      - **F**. Leaves less than half as wide as long. (**G**.)
        - **G**. Flowers pale lilac. PERSIAN LILAC (476) — Syringa pérsica.
        - **G**. Flowers white. WHITE PERSIAN LILAC — Syringa pérsica álba.
      - **F**. Leaves with notched and lobed edges; clusters small. FERN-LEAVED LILAC — Syringa pérsica laciniàta.

* LIGUSTRINA LILACS, with yellowish-white flowers and stamens, extending beyond the border of the short tube, little longer than the calyx. (**H**.)

- **H**. Base of leaf usually narrowed, 2–4 inches long, 1–1½ broad;

stamens about as long as the lobed border. Chinese Lilac — Syringa pekinénsis.

H. Base of leaf usually rounded. (**I.**)

  I. Stamens about twice as long as the border; leaves 2–6 inches long, 1½–2½ broad. Shrub to 12 feet. Amur Lilac — Syringa amurénsis.

  I. Stamens about as long as the border; leaves 3–7 inches long; flowers in large clusters, often a foot long. Tree to 30 feet. Japan Tree Lilac (480) — Syringa japónica.

Ligústrum. The Privets are closely related to the lilacs but when they form seeds have them inclosed in rounded usually black berries instead of in dry pods. They have smooth bright opposite entire-edged leaves, 4-lobed white flowers in clusters, June to Aug., and rounded 1- to 3-seeded berries lasting through much of the winter. All the species retain their leaves well into the fall and in the South there are a number of species with evergreen leaves.

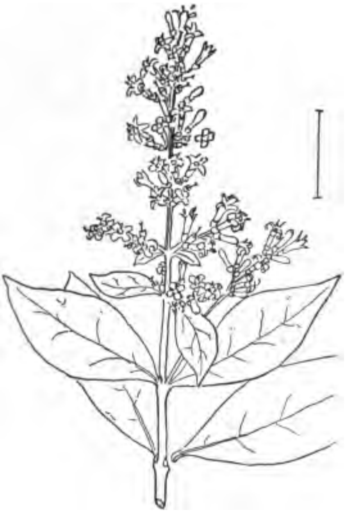


Fig. 482. — California Privet.

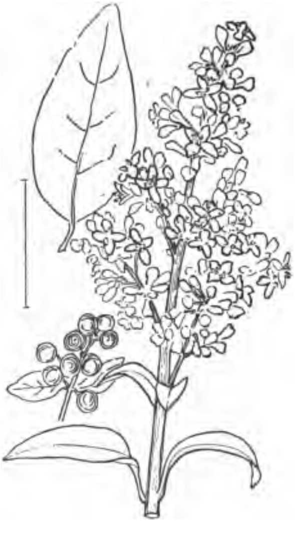


Fig. 483. — Common Privet.

The so-called California Privet (482) — Ligustrum ovalifòlium, — is now, beginning of the 20th century, the most popular of the hedge plants in the North. It is a handsome smooth dark green plant with somewhat stiff erect branches.

Common Privet (483) — Ligustrum vulgàre — grows to about the same height, to 15 feet. This has flowers with a shorter tube and more spreading border. Both have varieties with variegated foliage. The **Common Privet** has one variety with weeping branches, Ligustrum vulgàre péndulum.

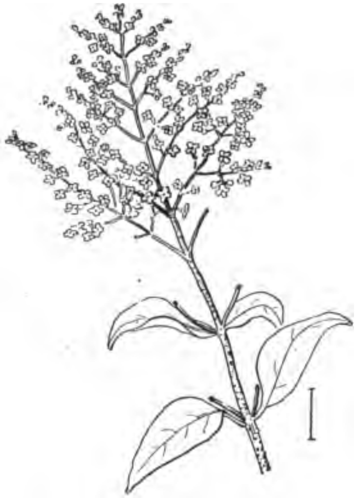


Fig. 484. — Wax Privet.

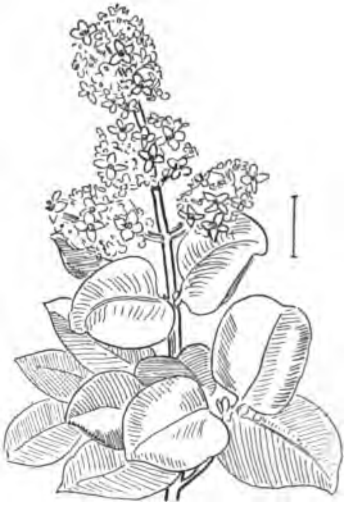


Fig. 485. — Thick-leaved Privet.

There are a dozen or more privets in cultivation with scores of named varieties. The one with the narrowest leaves, evergreen and hardy South, is Ligustrum Massalongiànum. It has warty and hairy twigs. Others, with hair-covered twigs, are, Ibòta, amurénse, and nepalénse.

[Seeds — a year or two to grow; twig cuttings.]

KEY TO THE PRIVETS

* Slender-flowered Privets, tube 2–3 times as long as the 4-lobed border. (**A.**)

- **A.** Branches hairy or velvety. (**B.**)
  - **B.** Leaves slender and tapering at both ends, evergreen; to 3 feet; hardy South; blooming July, Aug. Ligustrum Massalongiànum.
  - **B.** Leaves broader, oval to ovate, 1–2½ inches long, deciduous. (**C.**)

- **C.** Flowers in erect inch-long clusters with the flowers practically without stems, June; leaves hairy at edges. Shrub to 6 feet. BRIGHT-FRUITED PRIVET — Ligustrum ciliàtum.
- **C.** Flowers in erect 1–2½ inch long clusters with the flowers on short stems, June, July. AMUR PRIVET — Ligustrum amurénse.
- **C.** Flowers in nodding 1–1½ inch long clusters with the flowers stalked, June, July. Hardy North. IBOTA PRIVET — Ligustrum Ibòta.

A. Branches smooth; leaves half-evergreen. CALIFORNIA PRIVET (482) — Ligustrum ovalifòlium.

* Short-flowered Privets, tube usually shorter than the spreading border. (**D.**)

- **D.** Branches mòre or less hairy. (**E.**)
  - **E.** Leaves evergreen, 2–5 inches long; flower-clusters large, July, Aug. NEPAL PRIVET — Ligustrum nepalénse.
  - **E.** Leaves half-evergreen or deciduous. (**F.**)
    - **F.** Shrub to 15 feet with many named varieties. June, July. COMMON PRIVET (483) or PRIM — Ligustrum vulgàre.
    - **F.** Shrub to 8 feet with stemmed flowers in the loose 4-inch long clusters. CHINESE PRIVET — Ligustrum sinénse.
    - **F.** Shrub to 6 feet with about sessile flowers in small clusters. LATE-FLOWERING PRIVET — Ligustrum Quihòui.
- **D.** Branches smooth; leaves evergreen, at least South. (**G.**)
  - **G.** Bushy shrub to 10 feet; bloom July, Aug.; leaves 2–3½ inches long. JAPAN PRIVET — Ligustrum japónicum.
  - **G.** Large shrub or tree to 20 feet with spreading branches; leaves 3–5 inches long. WAX PRIVET (484) — Ligustrum lùcidum.
  - **G.** Dwarf shrub to 6 feet, very leafy, leaves 1½–2½ inches long. THICK-LEAVED PRIVET (485) — Ligustrum coriàceum.

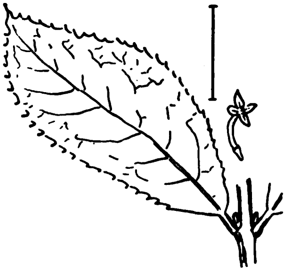


FIG. 486. — Fragrant Olive.

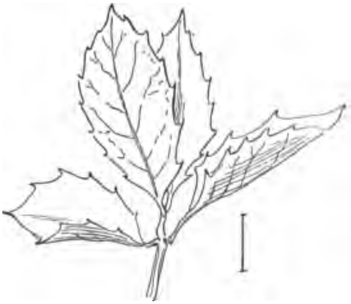


FIG. 487. — Holly-leaved Olive.

Òlea. The true Olives are hardy only South, where they are cultivated for the useful fruit and beautiful flowers; but there are a number of so-called olives belonging to other families of plants, some of which are cultivated in all portions of the country. All true olives have opposite thick, evergreen, usually entire-edged leaves and small white 4-lobed flowers in clusters. The stamens, as in the privets and lilacs, are two in number. The fruit-bearing olives are trees rather than shrubs, and are successfully grown only in southern California, etc. There are two species in cultivation: the European, Olea europæ̀a, and the African, Olea chrysophýlla. The African can be known by the golden color to the sides of the leaves.

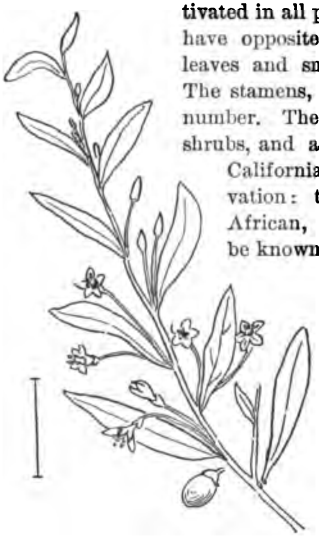


Fig. 488. — Common Matrimony Vine.

There are several species cultivated for their fragrant flowers but produce little or no fruit. These are more properly thrown into another genus, Osmánthus. The technical distinction between the two genera is found in the arrangement of the four lobes of the flower. The true Oleas have the lobes just touching at their edges, like the lilacs, while the Osmanthus flowers have their lobes more or less lapping. The finest of these plants and the one often cultivated North in hothouses is Fragrant Olive (486) — Osmanthus fràgrans, — an almost continual bloomer with small deliciously scented white flowers and opposite sharply toothed evergreen leaves. When planted out in the South, where it is hardy, it needs a somewhat shaded position, at least free from midday sun.

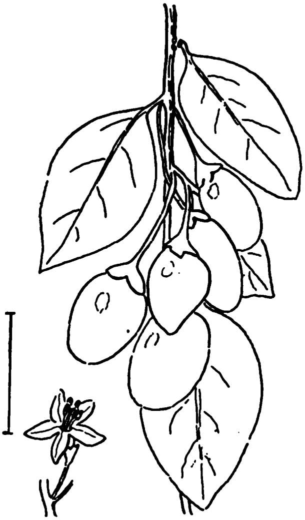


Fig. 489. — Chinese Matrimony Vine.

There is one species, and the most hardy of all, which has spiny-toothed

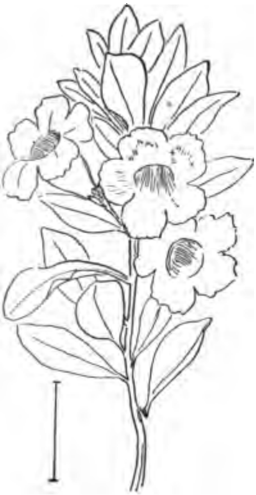


FIG. 490. — Leucophyllum.

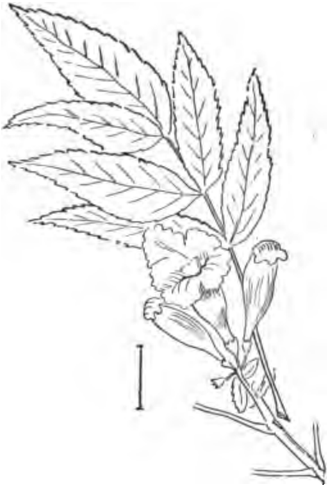


FIG. 491. — Yellow 'Elder.'

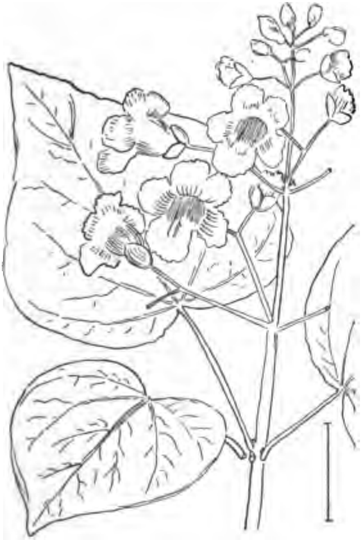


FIG. 492. — Dwarf Catalpa.

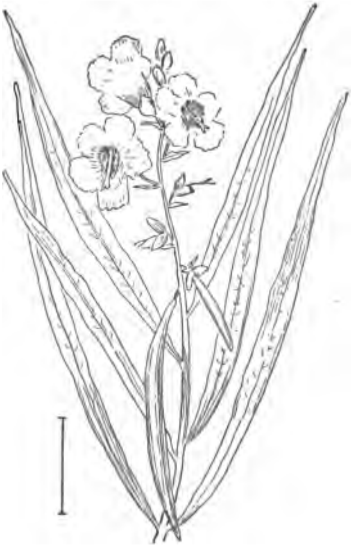


FIG. 493. — Desert 'Willow.'

holly-like evergreen leaves 2 to 4 inches long, Holly-leaved Olive (487) — Osmanthus Aquifòlium. While the foliage looks like the holly, the arrangement on the stem shows at once the difference. All true hollies have alternate, this has opposite, leaves. The plant can be successfully cultivated with but little protection north to Philadelphia and has a number of varieties: some with variegated foliage, as aùreum, yellow-blotched; argénteum, white-blotched.

[Seeds (slow in germination); twig cuttings; suckers.]

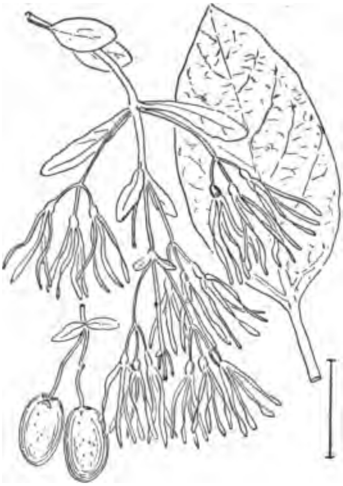


Fig. 494. — Fringe-tree.

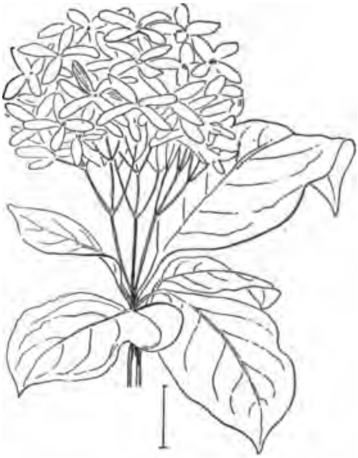


Fig. 495. — Chinese Fringe-tree.

Lýcium. The Matrimony Vines or Box Thorns are spiny plants often found in cultivation because of the beautiful red or orange berries. They are, as the name indicates, vines rather than shrubs and sometimes are useful as arbor coverings. The flowering season is a long one, May to September. The leaves are mostly small, thick, nearly evergreen, alternately clustered on the drooping spiny branches. The many-seeded berries are red or reddish, hanging on through the fall. The European species, Common Matrimony Vine (488) — Lycium halimifòlium, — is most frequent in cultivation though not so fine as the Chinese Matrimony Vine (489) — Lycium chinénse. Both of these are hardy North; the European has orange to yellow berries, about a half inch long, while the Chinese has brighter and more distinctly red oblong berries nearly an inch long. Besides these two hardy species, there are a dozen or more species which may be in cultivation in the South; and they are wild in Europe, Asia, Africa, North and South America. These species cannot be accurately distinguished without a close observation of the flowers with magnifying glass.

All the species sucker extensively and so should not be planted where they will interfere with other useful plants. The slender climbing or trailing branches sometimes grow to the length of 25 feet.

[Twig cuttings; suckers; layers; seeds.]

Leucophýllum texànum. Leucophyllum (490) is a loose-growing straggling shrub (1 foot) with alternate simple small, under 1 inch, entire leaves covered below with silvery-white wool. It has axillary showy purple bell-shaped 5-lobed flowers, an inch across, with 4 included stamens, spring and summer. The fruit is a 2-celled many-seeded pod. Hardy only in the Gulf states but of great beauty and ought to be generally cultivated as soon as the needed treatment is understood. [Seeds.]

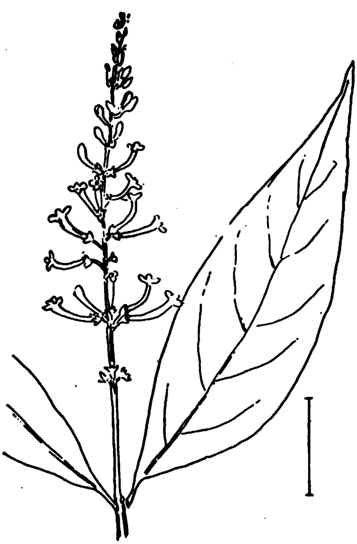


Fig. 496. — Japan Buddleia.

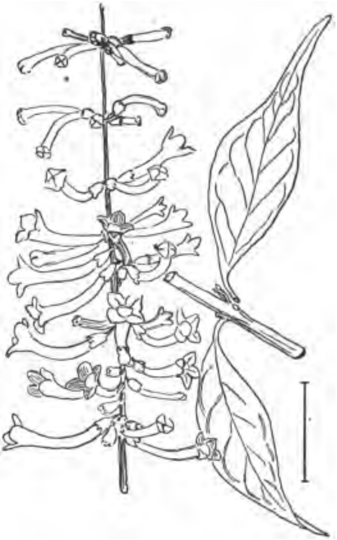


Fig. 497. — Lindley's Buddleia.

Técoma. The Trumpet Creepers are mainly climbing or twining in their habits but two species in cultivation are upright shrubs. All the Tecomas have large trumpet-shaped flowers and the shrubby forms have these flowers yellow and of great beauty, but unfortunately they are hardy only in the extreme South. The fruit is a long capsule, 5 to 7 inches, with winged seeds.

Yellow 'Elder' (491) — Tecoma stáns — grows in Florida to the height of 20 feet or more and spreads in dense masses. The leaves are opposite, odd-pinnate with 5 to 11 lanceolate coarsely toothed blades 1½ to 4 inches long. The flowers are fragrant, 1½ inches long, and bloom from spring to September in great clusters. The capsules are 5 to 7 inches long with many winged seeds.

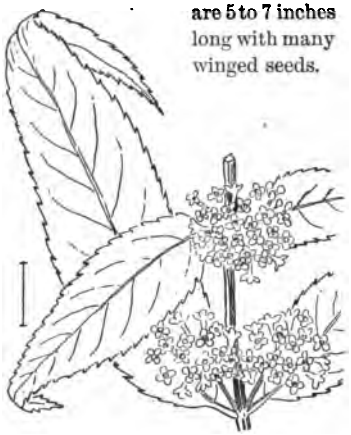


Fig. 498. — Chinese Buddleia.

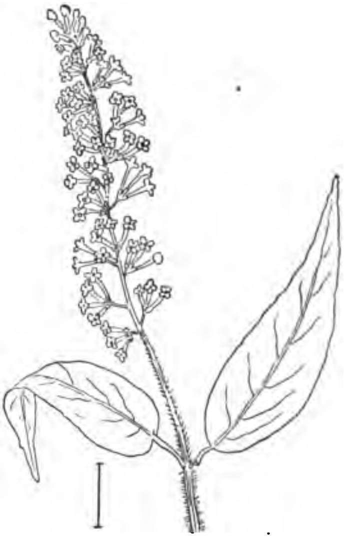


Fig. 499. — Madagascar Buddleia.

Soft 'Elder' — Tecoma móllis — is less hardy and decidedly more hairy and the flowers are not fragrant. [Seeds.]

Catálpa. The Catalpas are usually trees, but one variety is of low growth and could be used as a shrub; it is, however, usually grafted on the stem of another species to produce a weeping or a round-headed tree. This is the extensively cultivated Chinese, Dwarf, or Round-headed Catalpa (492) — Catalpa Búngei. In reality it is a dwarf variety of our commonest American species of Indian Bean — Catalpa bignonioìdes. All the Catalpas have opposite (or whorled in 3's) heart-shaped leaves, large beautiful nearly white clustered flowers, and long capsules filled with winged seeds which hang on through the winter. [Seeds.]

Chilópsis lineàris. The so-called Desert 'Willow' (493), from Texas, is a beautiful continuously blooming straggling shrub or small tree with slender willow-like leaves and nearly white catalpa-like flowers. The capsules are about 6 inches long. The leaves are whorled in 3's, opposite and alternate on the same twigs; near the tips where the flowers occur they are generally alternate. Hardy in the Gulf states and begins to bloom when only a few feet high, though it sometimes reaches the height of 30 feet. [Seeds; twig cuttings.]

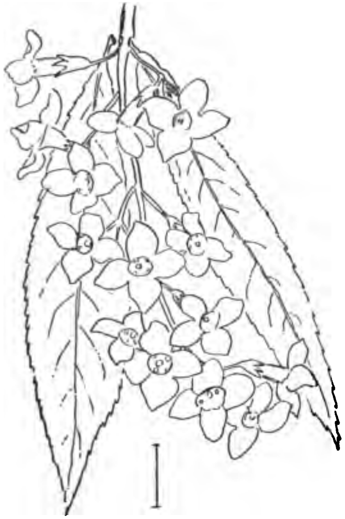


FIG. 500. — Colvill's Buddleia.

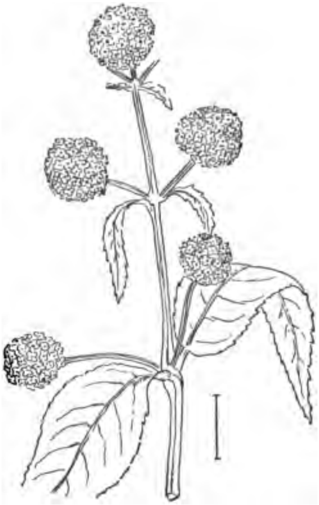


FIG. 501. — Globe-flowered Buddleia.

Chionánthus. FRINGE-TREE or OLD MAN'S BEARD (494) — Chionanthus virgínica — is a handsome shrub or small tree with large opposite (occasionally alternate) entire-edged deciduous leaves and fringe-like drooping white flowers in May and June. The fruit is a dark blue oval drupe ½ inch long, ripe in the fall. There is a Chinese species with broader and less fringe-like petals to the flowers, which are not so pendent on the branches, CHINESE FRINGE-TREE (495) — Chionanthus retùsa.

[Seeds (in the fall); layers; twig cuttings (under glass).]

Búddleia. The BUDDLEIAS are a group, 70 species, of beautiful shrubs (and trees, in the tropics) of rather warm climates. The leaves are opposite, simple, deciduous (or evergreen in the tropics), entire or notched. The flowers are tubular or bell-shaped with a 4-lobed border and 4 stamens included in the tube. The fruit is a 2-celled many-seeded capsule. The stems are more or less 4-sided. Only a few of the hardier species are in cultivation and but one, JAPAN BUDDLEIA (496) — Buddleia japónica, — can be grown in Massachusetts in sheltered places, though LINDLEY'S BUDDLEIA (497) — Buddleia Lindleyàna, — and HYBRID BUDDLEIA — Buddleia intermèdia, — (killed to the ground) are apt to grow up and bloom in the middle states. Most of them bloom through the summer. All are best fitted for the southern states. They should have well-drained soil and sunny position. [Seeds; twig cuttings.]

KEY TO THE SPECIES OF BUDDLEIA

* Flowers in elongated terminal clusters with long slender tube and spreading border. (**A.**)

- **A.** Flowers violet or lilac with no orange-yellow. (**B.**)
  - **B.** Leaves 3–6 inches long and slightly notched; flower-clusters 4–8 inches long and somewhat pendulous at the tips; stems winged at the 4 edges. JAPAN BUDDLEIA (496) — Buddleia japónica.
  - **B.** Leaves 2–4 inches long, pale beneath, slightly notched; clusters 3–5 inches long and erect; stem 4-sided. LINDLEY'S BUDDLEIA (497) — Buddleia Lindleyàna.
  - **B.** Leaves 4–5 inches long, dark green above; clusters 10–20 inches long and arching. HYBRID BUDDLEIA — Buddleia intermèdia.
  - **B.** Leaves often whorled in 3's; branches distinctly 4-winged; clusters 4–6 inches long and erect with rosy violet flowers. Buddleia intermèdia insígnis.
- **A.** Flowers violet with orange-yellow mouth in dense erect clusters 4–6 inches long. CHINESE BUDDLEIA (498) — Buddleia variàbilis.
- **A.** Flowers yellow, in winter; leaves dark above, whitish or yellowish below. Hardy only in extreme South. MADAGASCAR BUDDLEIA (499) — Buddleia madagascariénsis.

* Flowers large, 1 inch wide, with a broad tube purple or crimson with white mouth. COLVILL'S BUDDLEIA (500) — BUDDLEIA Cólvillei.

* Flowers in globular, head-like, axillary, long-stemmed clusters, orange-yellow. GLOBE-FLOWERED BUDDLEIA (501) — Buddleia globòsa.

Caryópteris Mastacánthus. BLUE 'SPIREA' or CHINESE BEARDWORT (502) is a beautiful, late-flowering plant, August to November, shrubby only at base. It is fully hardy South; and in the North, if cut back in the spring, it will grow vigorously and bloom in the fall. It has opposite deeply-notched leaves, and axillary clusters of blue (or white) flowers in stalked clusters. The leaves are 2 to 3 inches long. The flowers have a 5-lobed oblique-edged border and 4 protruding stamens. The fruit separates into 4 seed-like nutlets. (Called BLUE 'SPIREA' by the nurserymen.) [Twig cuttings; seeds.]

Callicárpa. The CALLICARPAS are opposite-leaved shrubs, with axillary clusters of small, usually blue berries, which remain on bright through the late fall. The simple leaves are serrated and deciduous. These interesting plants are hardy with a little protection.

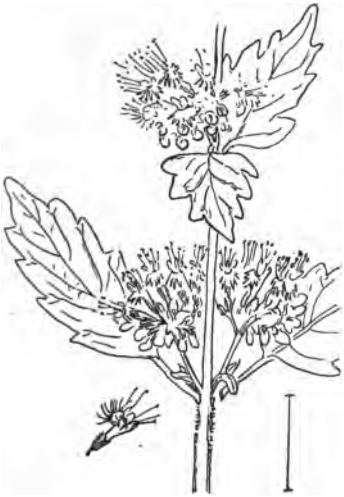


FIG. 502. — Blue 'Spirea.'

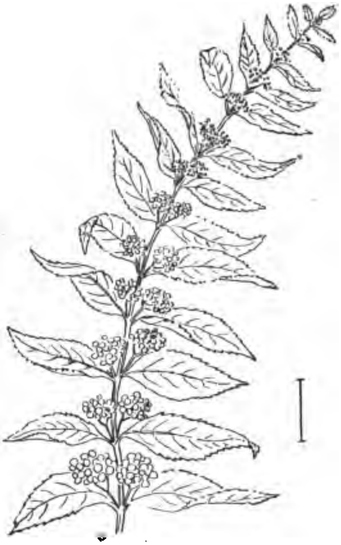


FIG. 503. — American Callicarpa.

The tallest, to 6 feet, and in fruit the handsomest species, is the AMERICAN CALLICARPA, the so-called FRENCH MULBERRY (503) (504) — Callicarpa americàna. It grows wild in Virginia and south, but is not so hardy North as either of the species from Eastern Asia. Of these the taller growing, 2 to 5 feet, is JAPAN CALLICARPA — Callicarpa japónica, — and the smaller, BEAUTY FRUIT or SMALL CALLICARPA (505) — Callicarpa purpùrea. [Twig cuttings (under glass); layers; seeds.]

Vìtex. The CHASTE-TREES are shrubs or small trees, with compound leaves having 5 to 7 blades all fastened to the end of the leaf-stalk

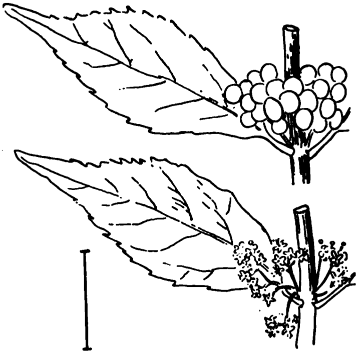


FIG. 504. — American Callicarpa.

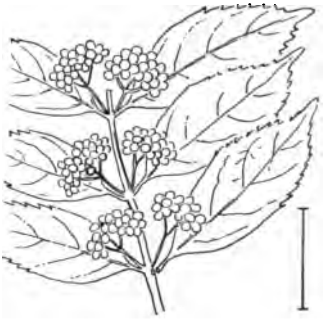


FIG. 505. — Small Callicarpa.

(palmate). The flowers are lilac (sometimes white), in clusters at the tips of the branches. The individual flowers are small and lopsided, July to September. The whole plant has a spicy odor when bruised. The species most common in cultivation has nearly entire-edged blades to its

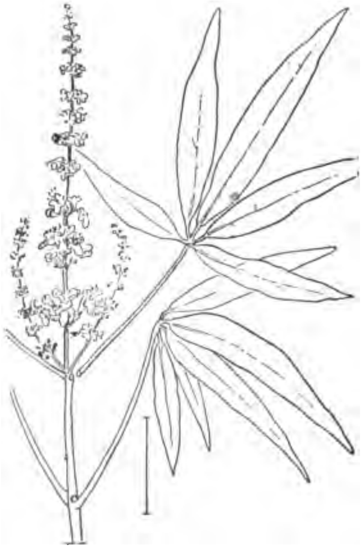


FIG. 506. — Chaste-tree.

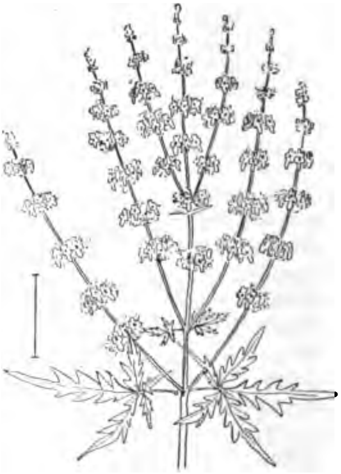


FIG. 507. — Cut-leaved Chaste-tree.

leaves, and is hardy, with some protection, to Massachusetts, Chaste-tree (506) — Vitex Ágnus-cástus. Another species about as hardy, though not so beautiful in flower, has the leaf-blades deeply and irregularly cut, or in some cases divided, Cut-leaved Chaste-tree (507) — Vitex incisa. There are other species of the genus, but probably these are the only ones in cultivation.

[Seeds, in spring; twig cuttings; layers.]

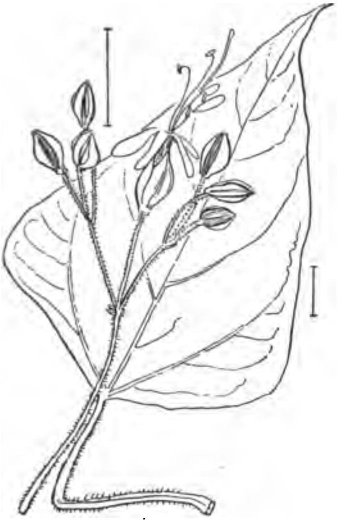


Fig. 508. — Japan Clerodendron.

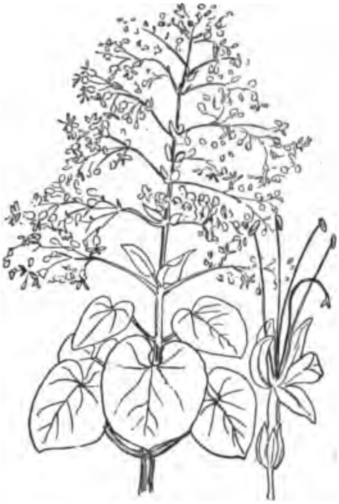


Fig. 509. — Chinese Clerodendron.

Clerodéndron. The Clerodendrons are mainly tropic plants with beautiful flowers. Some are climbing, others shrubby and erect, still others are herbaceous; none are fully hardy North. The most hardy species in cultivation is a hairy, somewhat woody plant, 4 to 12 feet high, with mainly opposite, soft, nearly entire-edged leaves. The flowers are in large terminal clusters, with a reddish-brown calyx surrounding a white corolla, and long stamens, Japan Clerodendron (508) — Clerodendron trichótomum. All the Clerodendrons can be known by the 5-toothed usually inflated calyx of one color, and a broadly spreading, 5-lobed, slightly irregular corolla, often of a different color. The corolla has a slender and usually long tubular portion, with 4 very long stamens.

There are many species in cultivation in Florida and California. One, Turk's Turban — Clerodendron Siphonánthus, — has very showy red drupes, which remain on the erect shrub, 2 to 6 feet high, a long time, and give the plant its value, as the white flowers are small and inconspicuous. The only shrubby species with brilliant scarlet flowers, CHINESE CLERODENDRON (509) — Clerodendron squamàtum, — grows 4 to 10 feet high and has opposite, round-heart-shaped, long-pointed, entire-edged leaves. This is hardy in the open only in southern Florida and southern California, but is frequent in cultivation in warm greenhouses North. A more hardy species, SPINY CLERODENDRON (510) — Clerodendron fœ́tidum, — with lilac-purple flowers and spiny branches, can be grown as far north as Philadelphia, though it kills to the ground every winter. It sprouts up every summer, and is in bloom in August. The bruised leaves have a disagreeable odor, whence the specific name. The opposite leaves are long-stalked and coarsely toothed; the flowers form a broad cluster, 4 to 8 inches broad.

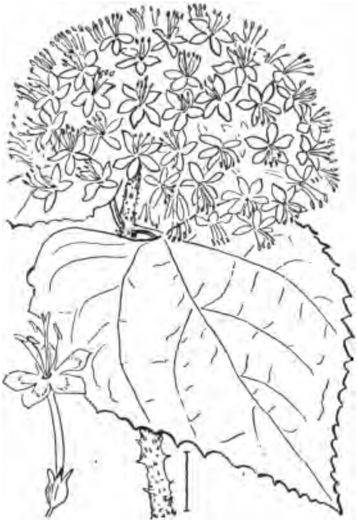


FIG. 510. — Spiny Clerodendron.

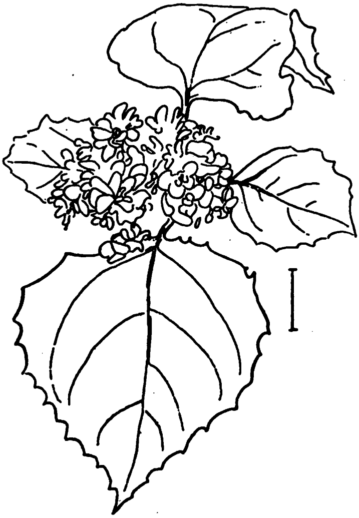


FIG. 511. — Sweet Clerodendron.

Another species with ill-scented leaves, toothed, opposite, but with the tube of the corolla very much shorter than in the above (about the length of the large calyx), is SWEET CLERODENDRON (511) — Clerodendron fràgrans. The fragrance is in the flowers, which are nearly white, often double and close-clustered, somewhat hydrangea-like. Hardy only in Florida and California. [Twig cuttings; seeds.]

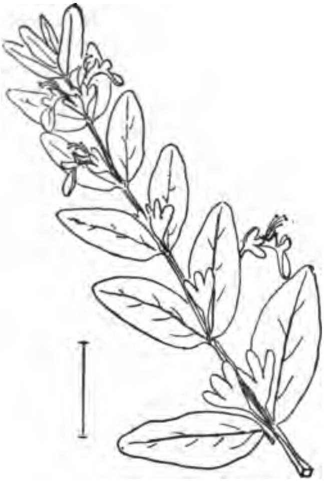


FIG. 512. — Shrubby Germander.

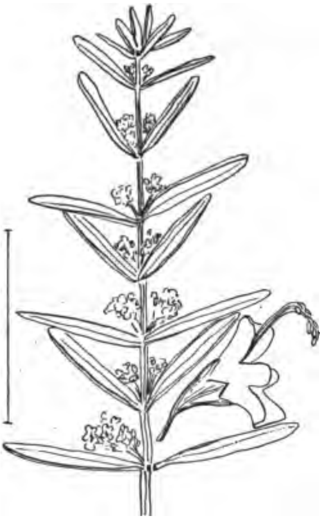


FIG. 513. — Rosemary.

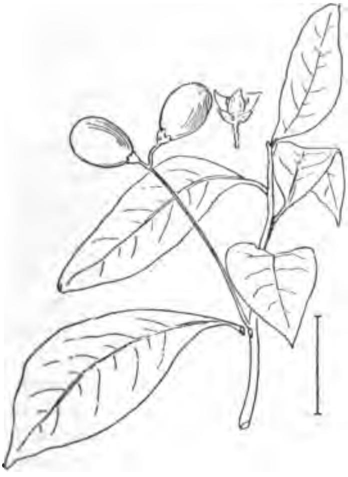


FIG. 514. — Swamp Bay.

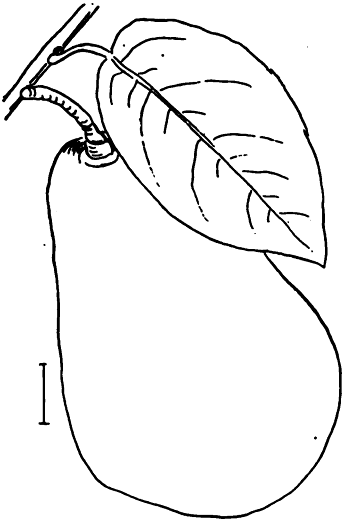


FIG. 515. — Alligator 'Pear.'

Teùcrium frùticans. The Shrubby Germander (512) is a wide-branching, shrubby plant, 2 to 3 feet high, with opposite, entire-edged, ovate leaves, and small blue lopsided flowers, forming terminal and lateral clusters. The flowers seem to have all the lobes turned down, and the 4 stamens projecting from a notch on the upper side. The fruit is like 4 seeds (nutlets) on the bottom of the 5-lobed green calyx. This is a plant recommended for dry places South. It has a long blooming season. [Seeds.]

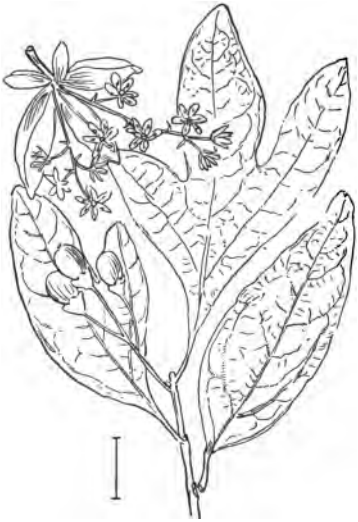


Fig. 516. — Sassafras.

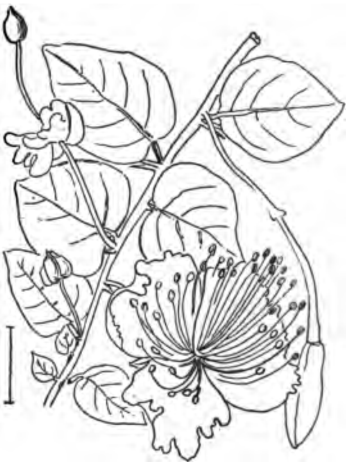


Fig. 517. — Caper-bush.

Rosmarìnus officinàlis. The Rosemary (513) or Old Man is an aromatic plant, with opposite linear leaves rolled at the edges. The 2-lipped light blue flowers are in axillary clusters in early spring, the stamens are 2, projecting from the flower. It is nearly hardy North, and grows to the height of 2 to 4 feet. The fruit is a collection of nutlets in the calyx. It is recommended for hedges in the extreme South. The leaves are used for making Hungary water and the oil of rosemary. [Seeds.]

Pérsea. The Perseas are aromatic trees or shrubs with alternate simple thick entire evergreen leaves, small regular white or greenish flowers ($\frac{1}{8}$–$\frac{1}{4}$ inch), and 1-seeded drupe-like fruit. The species in cultivation are small trees rather than shrubs, and none are fully hardy North.

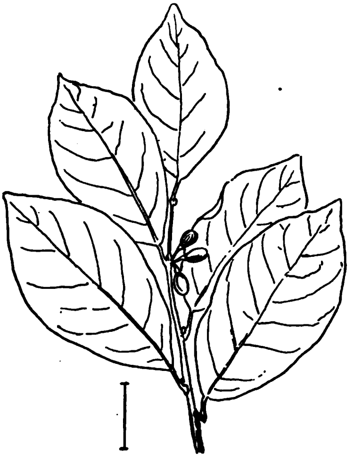


FIG. 518. — Spice Bush.

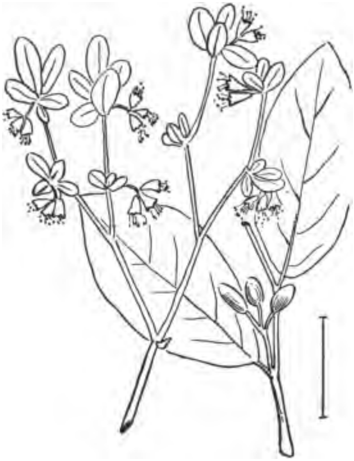


FIG. 519. — Leatherwood.

RED OR BULL BAY — Persea Borbònia (P. carolinénsis) — is wild from Virginia south, grows to the height of 40 feet, and has blue berries, ½ inch long, on red stems.

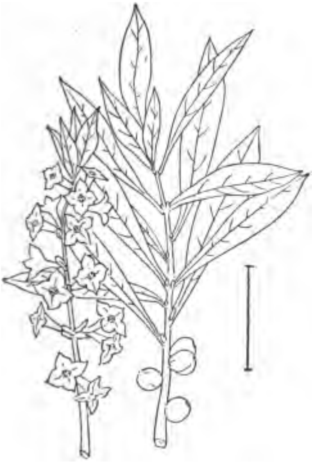


FIG. 520. — Common Mezereon.

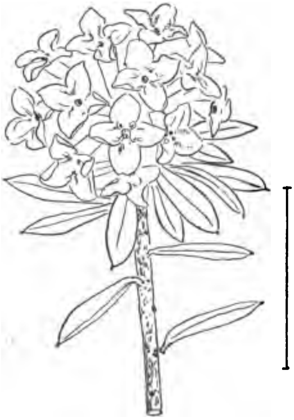


FIG. 521. — Pink Garland Daphne.

Swamp Bay (514) — Persea pubéscens, — wild from North Carolina south, is a small tree or shrub with the branchlets and other parts hairy, creamy white flowers (¼ inch), and dark blue drupes ¾ inch long.

Alligator 'Pear' (515) — Persea gratíssima, — of California, and Florida, has a slightly pear-shaped green fruit, several inches long, used as a salad and very palatable. A tree 20 to 30 feet high.

[Layers ; twig cuttings.]

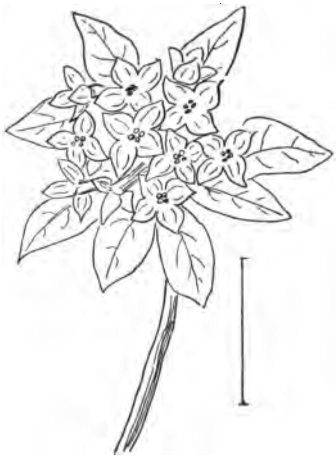


Fig. 522. — White Garland Daphne.

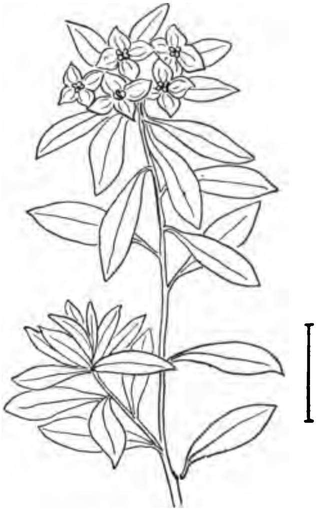


Fig. 523. — Silky Daphne.

Sássafras. Sassafras (516) — Sassafras variifòlium (S. officinàle) — is an aromatic shrub or tree growing in some cases to the height of 100 feet. It has alternate simple entire to 3-lobed leaves without notches or serrations. As the plant is diœcious, only those with pistillate flowers have the blue 1-seeded fruit, ½ inch long, on red stems. The flowers bloom before the leaves are expanded. The bark on young twigs is green with a purplish shade on the light side. The bark of the roots is peculiarly aromatic, and is often used in beer making.

[Seeds ; suckers ; root cuttings.]

Càpparis. This genus of over 100 mostly tropic plants is here represented by the one species from which the genus is named, Caper-bush (517) or Caper-tree — Capparis spinòsa, — from which capers are made by preserving the dried flower-buds. This spiny shrub (3 feet) is sometimes cultivated in greenhouses North. Leaves deciduous, roundish, entire. The white wavy-petaled flowers (2 inches broad) with numerous stamens are borne singly in the axils of the alternate leaves.

[Seeds; twig cuttings.]

Benzòin. Spice Bush or Benjamin Bush (518) — Benzoin æstivàle (B. Benzoin B. odoríferum), — is a very aromatic smooth shrub, to 15 feet, with alternate simple entire deciduous leaves and oblong red 1-seeded fruit a half inch long. The oval leaves are 3 to 5 inches long. The small yellow flowers expand in very early spring. This is practically the only species of the genus in cultivation, and it is not often found in shrubberies. The bark is peculiarly spicy. [Fresh seeds; layers; twig cuttings.]

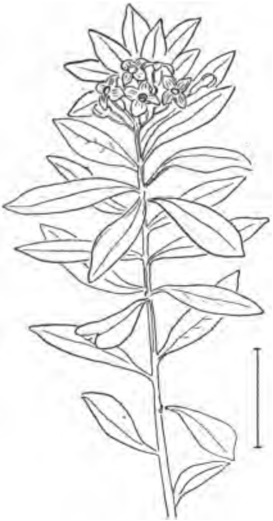


Fig. 524. — Olive-like Daphne.

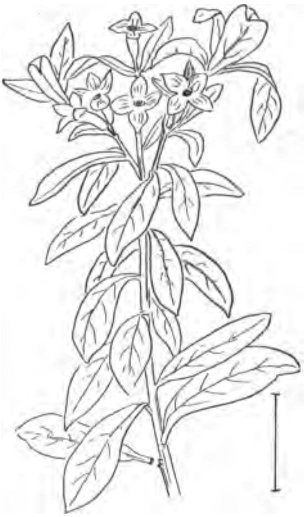


Fig. 525. — Hybrid Daphne.

Dírca palústris. Leatherwood, Moosewood, or Wicopy (519) is a small tree-like shrub, 2 to 6 feet high, with yellowish green twigs, tough bark, and alternate simple oval entire deciduous leaves. The fruit is an oblong red drupe ½ inch long. The flowers are small in umbel-like clusters in early spring, April, May. It is rare in cultivation, but grows wild in shady places from Canada south. [Seeds; layers.]

Dáphne. The Daphnes are very interesting small shrubs with clustered bright colored sweet-scented small flowers, in winter and early spring. The blossoms are 4-lobed, lilac-shaped, with 8 stamens included in the tubular portion. The fruit is a leathery 1-seeded drupe. Only four or five species are hardy North but many are or could be cultivated outdoors South. Most species have alternate simple entire-edged leaves, a few have opposite leaves. All have thick or thickish, and more than half the species evergreen, leaves. The best method for determining Daphnes from other plants with tubular 4-lobed flowers is to notice that the bright flower part in such shrubs as the lilac, the privet, and the true olives has a green calyx at base with 2 stamens at the mouth of the corolla; the Bouvardias have the same kind of calyx at base and 4 stamens at mouth of flower; the Buddleias have a calyx at base and 4 stamens included in the tube about halfway down; while the Daphnes have no outside part (in this case the bright part is a calyx and there is no corolla) and there are 8 small stamens in the tube.

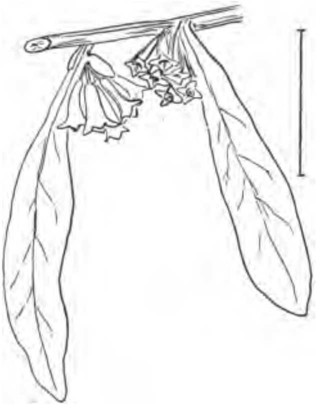


Fig. 526. — Wood Daphne.

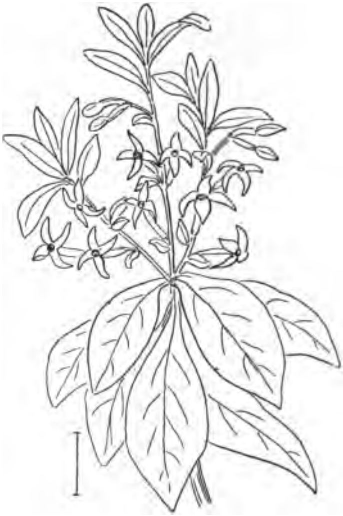


Fig. 527. — Pontic Daphne.

Most Daphnes grow well in either shade or sun.

[Seeds — slow to germinate; layers; twig cuttings.]

KEY TO THE DAPHNES

* Leaves deciduous; flowers lilac to purple in axillary clusters Feb. to April, before the leaves. (**A.**)

A. Leaves alternate, wedge-shaped; shrubs erect, to 4 feet. (**B.**)

B. Flowers usually 3 without stalks; leaves green above, gray below. Common Mezereon or Daphne (520) — Daphne Mezèreum.

B. Flowers 2–4 with short stems; leaves purple, almost evergreen. Daphne Houtteàna.

A. Leaves opposite, oblong, 1¼–2 inches long; flowers 3–7 in short-stalked clusters. Japanese Daphne — Daphne Génkwa.

* Leaves evergreen, alternate (2d B above might be looked for here). (**C.**)

C. Trailing or creeping plants with many-flowered terminal clusters (April–June) and wedge-shaped leaves; flowers fragrant. (**D.**)

D. Flowers pink; leaves ½–1 inch long. Pink Garland Daphne (521) — Daphne Cneòrum.

D. Flowers white or creamy; leaves 1–1½ inch long. White Garland Daphne (522) — Daphne Blagayàna.

C. Erect, 1–5 feet high. (**E.**)

E. Flowers densely hairy outside in few-flowered terminal heads. (**F.**)

F. Flowers purple, ¾ inch long, with bracts; leaves 1-2 inches long. Silky Daphne (523) — Daphne serícea.

F. Flowers white or nearly so, ½ inch long, no bracts. Olive-like Daphne (524) — Daphne oleòides.

F. Flowers reddish purple, very fragrant, large. Hybrid Daphne (525) — Daphne hỳbrida.

E. Flowers smooth outside or nearly so. (**G.**)

G. Flowers in dense terminal clusters, white, red to purple, very fragrant. Sweet Daphne — Daphne odòra.

G. Flowers in 5–10-flowered axillary clusters, odorless, March–May. Wood Daphne (526) — Daphne Laurèola.

G. Flowers in 1–3-flowered axillary clusters, fragrant, April–May. Pontic Daphne (527) — Daphne pôntica.

Daphne Mezereum, D. Cneorum, D. Blagayana are hardy to Massachusetts, D. Laureola, D. pontica to New York, others only South.

Polỳgonum. The Polygonums form a large genus, 200 species, of mainly herbaceous plants, but two of them appear so like bushy shrubs they are introduced here, though they die down to the ground in winter.

The plainest peculiarity of the plants is the sheath around the stem above the attachment of the alternate simple leaf. The small 4- or 5-parted flowers are generally in spike-like clusters. The species here given grow up from the roots each spring and show abundant nearly white small flowers, in summer. [Seeds; divisions.]

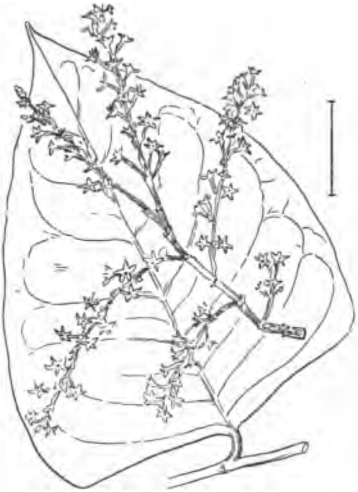


FIG. 528. — Siebold's Polygonum.

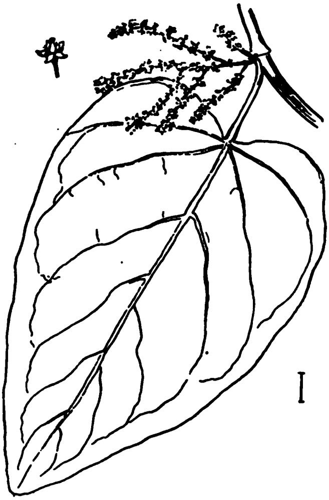


FIG. 529. — Sacaline.

- * Bushy-growing plant with graceful curving stem 3–5 feet high ; leaves large, about as wide as long, and peculiarly square at base ; white flowers abundant. SIEBOLD'S POLYGONUM (528) — Polygonum cuspidàtum (P. Sièboldi).
- * Larger and more vigorous plants 8–12 feet high with larger and proportionally narrower leaves, sometimes a foot or more long, distinctly heart-shaped at base. This plant is too luxuriant and with such a tendency to spread as to become a pest. SACALINE (529) — Polygonum sachalinénse.

Elæágnus.[1] The Elæagnus genus are shrubs or small trees with alternate leaves covered on one or both sides with silvery scales. These leaves are either entire- or crisped-edged. The fruit is olive-like, 1-seeded. There are many species in cultivation for the silvery foliage and the edible

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[1] For general key to plants with silvery scales on their leaves see p. 304.

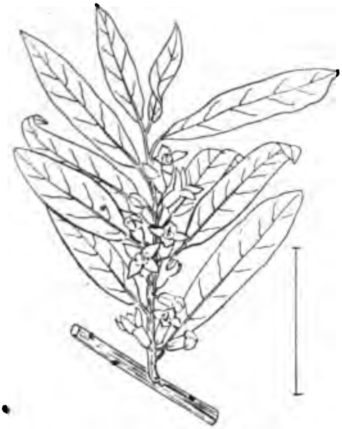

Fig. 530. — Oleaster.

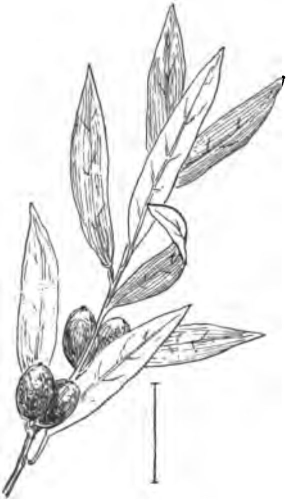

Fig. 531. — Oleaster.

fruit. The tallest growing species is the so-called **Russian 'Olive'** or **Oleaster** (530) (531) — Elæagnus angustifòlia, — growing to the height of 25 feet. This is a spiny plant with light green leaves 2 to 3 inches

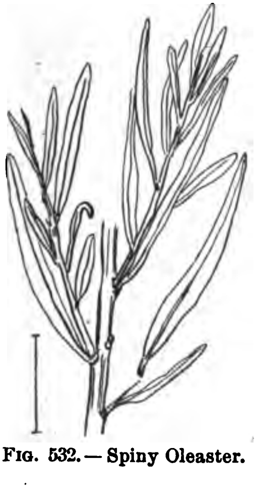

Fig. 532. — Spiny Oleaster.

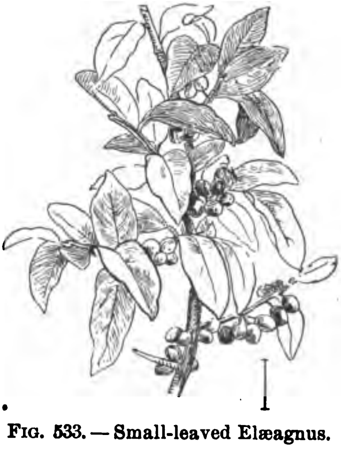

Fig. 533. — Small-leaved Elæagnus.

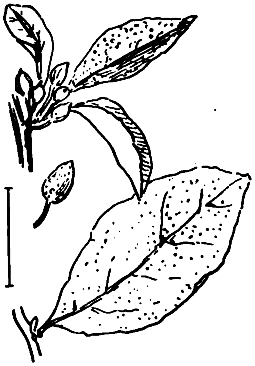

FIG. 534. — Japanese Oleaster.

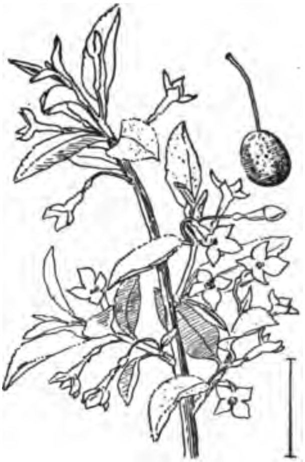

FIG. 535. — Japanese Goumi.

long and oval silvery-scaled yellow fruit a half inch or more long. A variety still more spiny is SPINY OLEASTER (532) — Elæagnus spinósa.

Another similar spiny tall-growing species, to 18 feet, with broader leaves and nearly globular pink fruit ⅛ inch long is SMALL-LEAVED ELÆAGNUS (533) — Elæagnus parvifòlia.

A brownish-twigged spreading species, to 12 feet, with deciduous leaves and red juicy late-ripening fruit is JAPANESE OLEASTER or ELÆAGNUS (534) — Elæagnus umbellàta. This is frequently spiny with

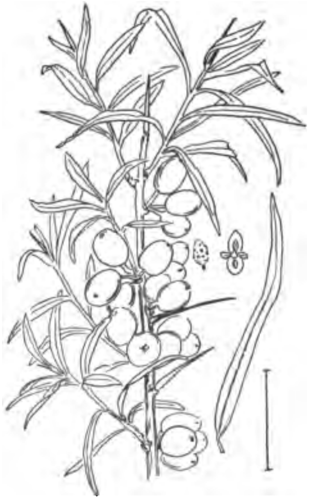

FIG. 536. — Sea Buckthorn.

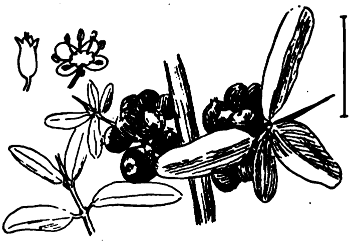

FIG. 537. — Buffalo Berry.

the leaves crisped at edge and no brown scales beneath. A similar spreading shrub, to 8 feet, with no spines but with some brown scales on the lower sides of the crisped leaves is Elæagnus multiflòra.

A still smaller shrub, to 6 feet, with brown branches and many brown scales on the lower sides of the oval leaves is JAPANESE GOUMI (535) — Elæagnus lóngipes. This is common in cultivation and ripens its ornamental fruit very early, June, July.

The above are all hardy North and well worthy of cultivation. There are two or more evergreen species in cultivation South; of these the one with silvery-white twigs and no spines is Elæágnus macrophýlla; while the shrub with brown and usually spiny twigs is Elæagnus púngens. This last is a very variable species, several named varieties having variegated foliage. [Seeds; twig cuttings; layers; root cuttings.]

Hippóphaë.[1] The SEA BUCKTHORN (536) — Hippophaë rhamnoides — is an alternate leaved spiny shrub or small tree with foliage covered with silvery scales, like the last genus. It is cultivated mainly for the clustered bright orange-red berries the size of peas, which remain through the winter. The almost linear leaves, grayish-green above and silvery below, give variety and beauty in summer to a shrubbery. As the plant is somewhat diœcious, care must be taken to have stamen-bearing plants enough to fertilize those with pistils, so that the ornamental fruit may be formed in abundance. The small yellowish flowers are clustered in 2's and 3's in May, and the berries ripen in September.

The Hippophaë flower is 2-lobed or 2-parted, while those in Elæágnus are 4-lobed. [Layers; twig cuttings; root cuttings; seeds.]

Shephérdia.[2] SHEPHERDIAS are silvery-scaled plants similar to the last genus, but the leaves are opposite instead of alternate on the stems. They are not nearly so frequent in cultivation. The only species fairly in the trade is the BUFFALO BERRY (537) — Shepherdia argéntea, — a thorny shrub or tree reaching the height of 18 feet with the foliage silvery on both sides and with small (¼ inch) globular red or yellow fruit. Another species is a spreading twiggy shrub 3 to 7 feet high without thorns, but with brownish-scurfy twigs and leaves, and oval hardly edible fruit, CANADIAN BUFFALO BERRY — Shepherdia canadénsis, — very rare in cultivation. These two species are deciduous. There is a small evergreen species from Utah, Shepherdia rotundifòlia, with round-oval silvery leaves and stalked scurfy berries ripe in July. All the species are more or less diœcious, and so need staminate and pistillate forms in order to produce fruit. [Seeds.]

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[1] For general key to plants with silvery scales on their leaves, see p. 304.

[2] *Ibid.*

KEY TO THE SILVERY-SCALED SHRUBS — ELÆAGNUS, HIPPOPHOË, AND SHEPHERDIA

* Leaves alternate, deciduous; hardy; flowering in the spring, April–June. (**A.**)

- **A.** Branchlets and under sides of the leaves silvery-white without any brown or reddish scales; shrubs or trees to 20 feet with leaves 2–3 inches long. (**B.**)
  - **B.** Leaves entire and not crisped at edges; berries usually large, oval, yellow coated with silvery scales, axillary, 1–3 in a cluster. Often spiny (the most spiny form is **Spiny Oleaster** (532), var. spinòsa): **Russian 'Olive,' Garden Elæagnus** or **Oleaster** (530) (531) — Elæagnus angustifòlia.
  - **B.** Leaves crisped at edges; flowers and fruit crowded on short side shoots; berries nearly globular, silvery when young, pink in summer when ripe (⅓ inch long). **Small-leaved Elæagnus** (533) — Elæagnus parvifòlia.
- **A.** Branchlets with reddish or brownish scales, sometimes with some silvery scales; leaves silvery below but frequently with brownish scales. (**C.**)
  - **C.** Fruit decidedly juicy, some shade of red or scarlet, edible. (**D.**)
    - **D.** Fruit nearly globular, short-stalked, erect, ⅓ inch long, ripe Sept. or Oct.; leaves crisped at edge and without brown scales beneath. Shrub to 12 feet, often spiny. **Japanese Oleaster** (534) — Elæagnus umbellàta.
    - **D.** Fruit oval, erect or nodding, ripe July or Aug. on stems about as long as the fruit, ⅓ inch; leaves with a few brown scales beneath, not crisped at edges. Spreading shrub to 8 feet. **Elæagnus** — Elæagnus multiflòra.
    - **D.** Fruit pendulous, oblong, ¾ inch long on stems over an inch long, ripe June or July. Shrub to 6 feet. **Japanese Goumi** (535) — Elæagnus lóngipes.
  - **C.** Fruit rather dry, silvery white, oval, ⅓–½ inch long on short stems, ripe July, Aug. Erect spineless shrub to 12 feet; leaves silvery on both sides and with brownish scales beneath. **Elæagnus** or **Silverberry** — Elæagnus argéntea.
  - **C.** Fruit somewhat poisonous, though eaten by birds, bright orange, globular (¼ inch), in clusters, found in abundance but only on a portion of the plants as the flowers are diœcious; leaves very slender, grayish green above and silvery below. Branches ending in sharp spines. **Sea Buckthorn** (536) — Hippophaë rhamnoìdes.

* Leaves alternate, evergreen; usually flowering in the fall; hardy only South, small shrubs to 6 feet. (**E**.)

E. Branchlets silvery-white; no spines; leaves broad, silvery beneath. **LARGE-LEAVED EVERGREEN ELÆAGNUS** — Elæagnus macrophýlla.

E. Branchlets brown; usually very spiny; leaves oval, undulate, 2–4 inches long, silvery beneath with some brownish scales; fruit short-stalked, ¾ inch long, covered with silvery and brown scales; leaves often variegated with blotches and lines of white, yellow, or pink, giving rise to several named varieties. **THORNY EVERGREEN ELÆAGNUS** — Elæagnus púngens.

* Leaves opposite, deciduous, entire, 1–2 inches long, densely silvery beneath. Hardy American plants sometimes cultivated for the silvery foliage or edible fruit; more or less completely diœcious. (**F**.)

F. Without thorns; twigs brown-scurfy; leaves oval; shrub 4–8 feet high, rarely cultivated; fruit red or yellow, oval, ¼ inch long, hardly edible. **SHEPHERDIA** or **CANADIAN BUFFALO BERRY** — Shepherdia canadénsis.

F. With numerous thorns; young twigs silvery; leaves oblong-lanceolate; berries globular, red or yellow (¼ inch), sour, edible, ripe July, Aug. Upright tall shrub to 18 feet. **BUFFALO** or **RABBIT BERRY** (537) — Shepherdia argéntea.

* Leaves opposite, evergreen, entire, round-oval and somewhat cordate at base. Diœcious bush from Utah. Shepherdia rotundifòlia.

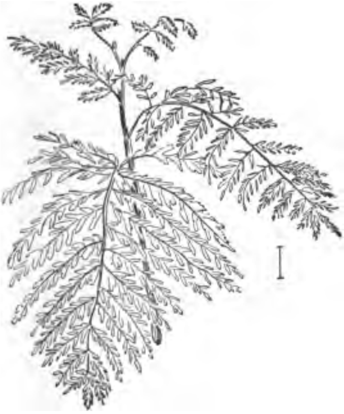

FIG. 538. — Grevillea.

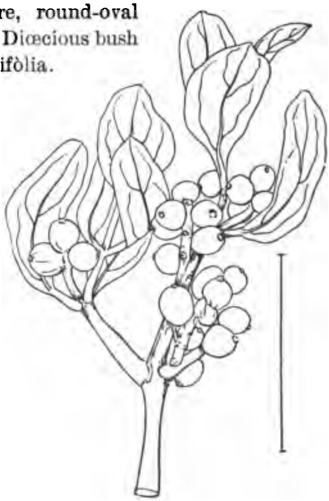

FIG. 539. — American Mistletoe.

Grevíllea robústa. GREVILLEA (538), the so-called SILK 'OAK,' is a beautiful fern-leaved plant which in the open in the extreme South forms a tall tree. It is usually cultivated as a pot plant, and in this condition has its greatest beauty when less than 10 feet high, so it is raised each year from seeds. The flowers and fruit are small and inconspicuous, and, of course, do not appear on these young plants. Very ornamental as a foliage plant. [Seeds.]

Phoradéndron flavéscens. The AMERICAN MISTLETOE (539) grows wild as a parasitic plant on several deciduous trees, more frequently on the Sour Gum and the Red Maple, and is gathered for Christmas decorations. It grows in large dense bunches, with opposite, entire, fleshy, yellowish-green evergreen leaves and stems, and small white globular berries. [Seeds.]

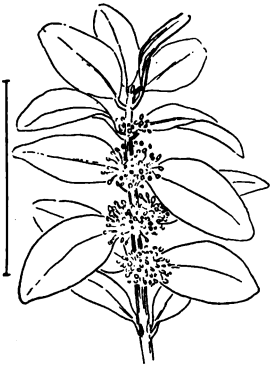

FIG. 540. — Common Boxwood.

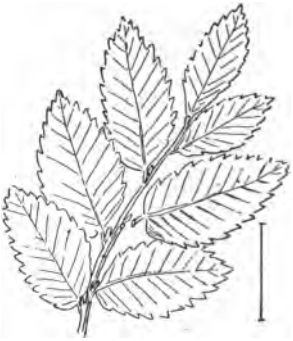

FIG. 541. — Chinese Elm.

Búxus. The BOXWOODS or BOX TREES are extensively cultivated evergreen shrubs or small trees with small opposite entire leaves. They are dense but slow growing plants, frequently used for pruning into fantastic shapes and as borders to flower beds and paths. There are a score of named varieties differing in size of leaves and tallness of growth. The flowers and fruit are inconspicuous.

The tallest growing form sometimes reaches the height of 25 feet, TREE BOX or COMMON BOXWOOD (540) — Buxus sempérvirens, — with square, and somewhat hairy stems and rounded leaves ½ to 1½ inch long. This species has several forms with variegated foliage: argénteo-marginàta, white-edged; aùreo-marginàta, yellow-edged; aùrea, yellow-leaved. The smallest growing form of this Chinese species is suffruticòsa (nàna). A less hardy species growing to the height of 6 feet with more wedge-shaped leaves is the JAPAN BOX — Buxus japónica, — this also has several color

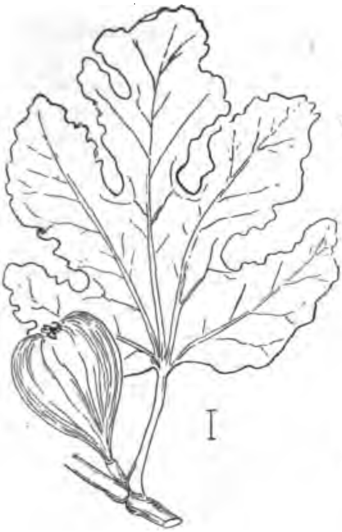

FIG. 542. — Fig.

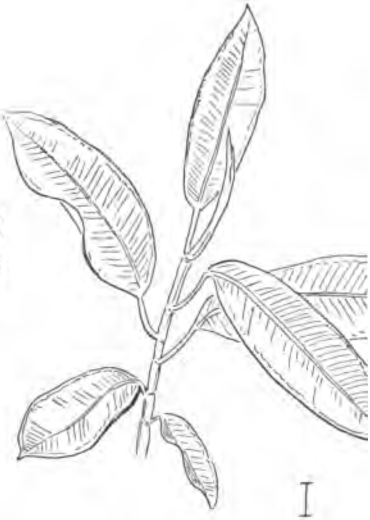

FIG. 543. — India Rubber Plant.

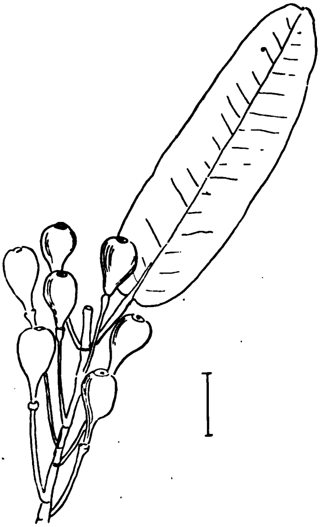

FIG. 544. — Variable-leaved Rubber Plant.

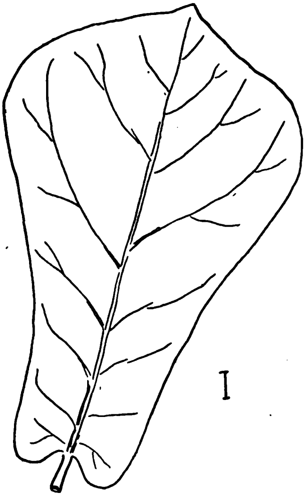

FIG. 545. — Fiddle-leaved Rubber Plant.

Grevíllea robústa. GREVILLEA (538), the so-called SILK 'OAK,' is a beautiful fern-leaved plant which in the open in the extreme South forms a tall tree. It is usually cultivated as a pot plant, and in this condition has its greatest beauty when less than 10 feet high, so it is raised each year from seeds. The flowers and fruit are small and inconspicuous, and, of course, do not appear on these young plants. Very ornamental as a foliage plant. [Seeds.]

Phoradéndron flavéscens. The AMERICAN MISTLETOE (539) grows wild as a parasitic plant on several deciduous trees, more frequently on the Sour Gum and the Red Maple, and is gathered for Christmas decorations. It grows in large dense bunches, with opposite, entire, fleshy, yellowish-green evergreen leaves and stems, and small white globular berries. [Seeds.]

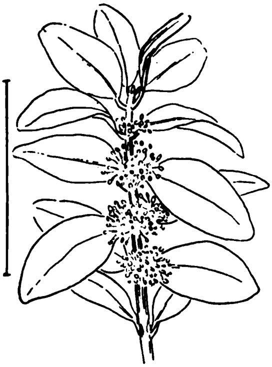

FIG. 540.—Common Boxwood.

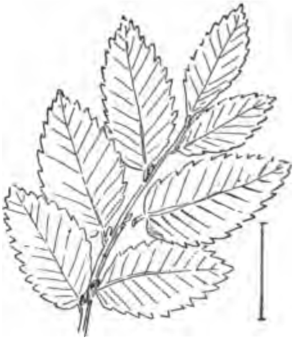

FIG. 541.—Chinese Elm.

Búxus. The BOXWOODS or BOX TREES are extensively cultivated evergreen shrubs or small trees with small opposite entire leaves. They are dense but slow growing plants, frequently used for pruning into fantastic shapes and as borders to flower beds and paths. There are a score of named varieties differing in size of leaves and tallness of growth. The flowers and fruit are inconspicuous.

The tallest growing form sometimes reaches the height of 25 feet, TREE BOX or COMMON BOXWOOD (540) — Buxus sempérvirens, — with square, and somewhat hairy stems and rounded leaves $\frac{1}{2}$ to $1\frac{1}{2}$ inch long. This species has several forms with variegated foliage: argénteo-marginàta, white-edged; aùreo-marginàta, yellow-edged; aùrea, yellow-leaved. smallest growing form of this Chinese species is suffruticòsa (less hardy species growing to the height of 6 feet with more leaves is the JAPAN BOX — Buxus japónica, — this also

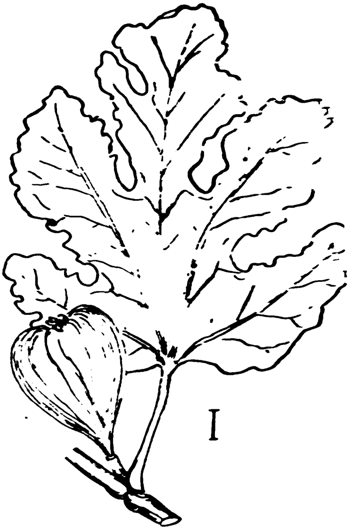

Fig. 542. — Fig.

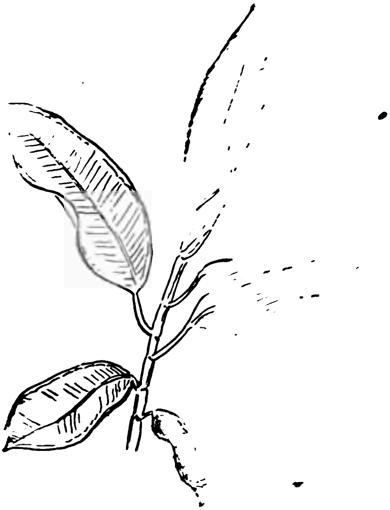

Fig. 543. — India Rubber Plant.

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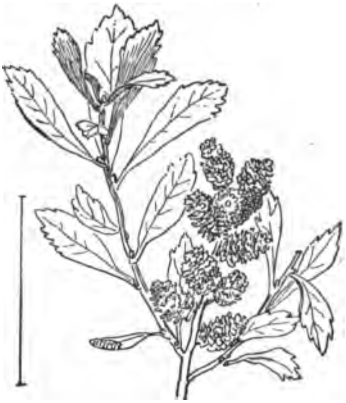

FIG. 549. — Sweet Gale.

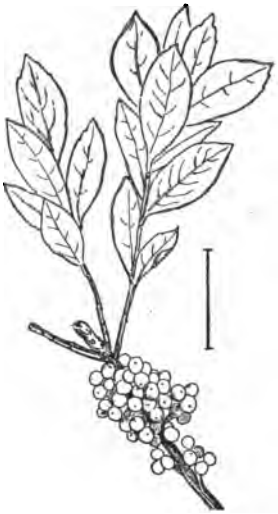

FIG. 550. — Waxberry.

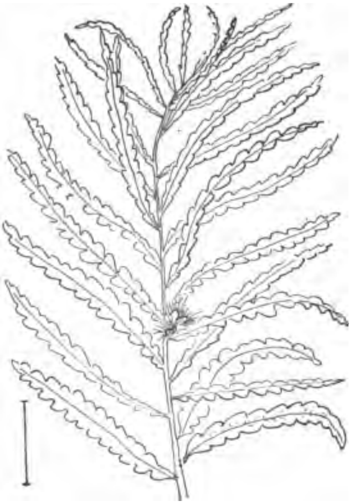

FIG. 551. — Sweet 'Fern.'

Maclùra. OSAGE 'ORANGE' (547) — Maclura (Tóxylon) pomífera — is a thorny shrub or tree with alternate entire glossy leaves having milky juice. The large orange-like fruit gives name to the plant. In the past it was extensively used for hedges; for this it was well fitted, because of its thorns and dense growth. The introduction of wire fences has lessened its value to the horticulturist and now it is generally seen as a tree from 30 to 50 feet high. The short sharp thorns about an inch long just above the bases of the ovate entire leaves (4 inches long) together with the abundant milky juice will enable the reader to separate this from other plants. [Seeds.]

Myrìca and Comptònia. Wax 'Myrtle' (548) — Myrica cerífera, — Sweet Gale (549) — Myrica Gàle, — Waxberry or Bayberry (550) — Myrica carolinénsis, — and Sweet 'Fern' (551) — Myrica (Comptonia) asplenifòlia, — are fragrant plants with alternate simple leaves, inconspicuous flowers, and waxy or bur-like dry globular fruits. They are wild shrubs rare in cultivation. The Sweet 'Fern' receives its name from the fern-like appearance of its leaves and is useful to cover, with its dense foliage, rocky barren and shady places. [Seeds; layers; twig cuttings.]

* Leaves narrow and notched like a fern; fruit bur-like. Sweet 'Fern' (551) — Myrica (Comptonia) asplenifòlia.
* Leaves entire or with few notches; fruit globular, waxy. (**A.**)
  A. Low shrubs always less than 10 feet high; leaves usually blunt at tip. (**B.**)
    B. Twigs dark brown; leaves small, 1–2½ inches long. Sweet Gale (549) — Myrica Gàle.
    B. Twigs gray; leaves larger, 2–4 inches long. Waxberry (550) or Bayberry — Myrica carolinénsis.
  A. Tall shrub, sometimes a small tree to 40 feet; leaves generally with acute tips. Wax 'Myrtle' (548) — Myrica cerífera.

Bétula. The Birches are mainly tall hardy trees but there are several species shrubby in growth and frequent in cultivation. The birches have alternate simple straight-veined notched leaves, sometimes cut into lobes.

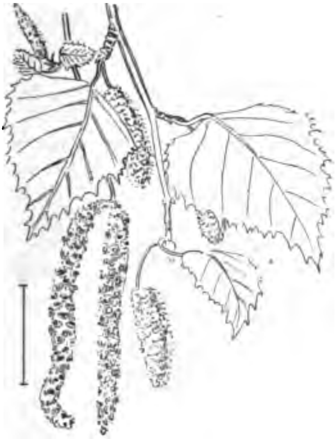

Fig. 552. — European White Birch.

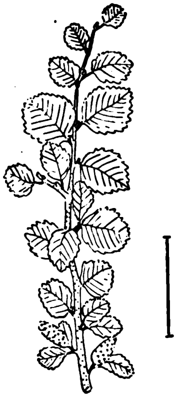

Fig. 553. — Scrub Birch.

The species seen with chalky bark is generally the WHITE BIRCH — Betula álba — of Europe, which grows to the height of 80 feet in its regular form. There are a score of named varieties some of which are low trees and some only shrubs, as EUROPEAN WHITE BIRCH — Betula péndula (552).

The four species always shrubby in growth are: SCRUB or DWARF BIRCH (553) — Betula glandulòsa, — 1 to 4 feet high with rounded small leaves, ¼ to 1 inch long, and brown glandular warty twigs; DWARF BIRCH (554) — Betula nàna, — a low spreading smooth shrub rarely 4 feet high with small rounded notched leaves broader than long; LOW or SWAMP BIRCH (555) — Betula pùmila, — 2 to 15 feet high with longer and less rounded leaves having dense brownish hairs below when young; and SHRUBBY BIRCH (556) — Betula hùmilis, — 2 to 6 feet high, with glandular twigs and crenately-serrate smooth leaves ½ to 1¼ inches long. [Seeds.]

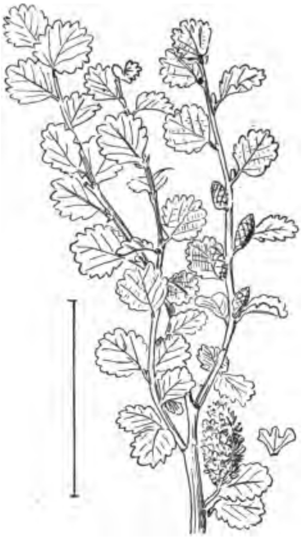

FIG. 554. — Dwarf Birch.

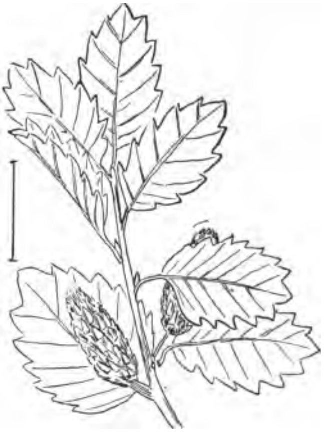

FIG. 555. — Low Birch.

Álnus. The ALDERS are generally shrubby plants growing abundantly along streams and in damp places. They have alternate simple straight-veined notched deciduous leaves and dry rounded cones which remain on the bushes throughout the year; these cones are the best test of the alders. Most have catkin flowers opening in early spring. The species with fall catkins is usually a tree to 30 feet, SEASIDE ALDER (557) — Alnus marítima, — which has shining foliage and yellow catkins in August to September.

The smallest species is the Green or Mountain Alder (558) — Alnus críspa (A. víridis), — which never grows to over 10 feet. It can be surely known by the winged nuts or seeds, in the cones, nearly ½ inch wide. The other two American species are: Speckled or Hoary Alder (559) — Alnus incàna, — with leaves hairy beneath, at least on the veins; and Smooth Alder (560) — Alnus rugòsa, — with leaves green and smooth on both sides. The tallest species and the only one which grows well in dry places is Black Alder (561) — Alnus glutinòsa — of Europe, with gummy twigs, sometimes reaching the height of 70 feet. The figures given illustrate the great variety of foliage in the forms of this species.

[Seeds; twig cuttings; suckers.]

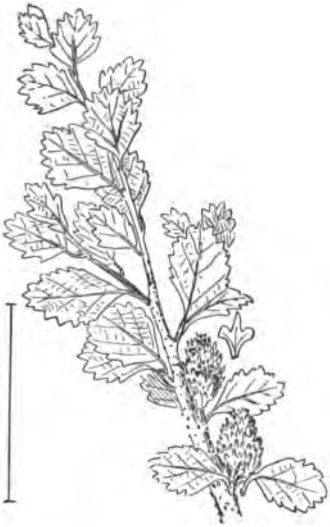

Fig. 556. — Shrubby Birch.

Córylus. The Hazelnuts and Filberts are shrubby plants with rounded hard-shelled nuts inclosed more or less in green leaf-like bracts. The leaves are alternate, simple, straight-veined with notched edges. The three common species can be best separated by means of the difference in the bracts which surround the nuts: in the Beaked Hazelnut (562) — Corylus rostràta, — 2 to 6 feet high, the bracts are not very leaf-like and project beyond the nut into a beak; in the eastern Hazelnut (563) — Corylus americàna, — 3 to 8 feet high, these bracts form a fringe-like border generally hiding the nut; the European Filbert (564) — Corylus Avellàna — grows much taller, to 15 feet, and never has the bracts fully hiding the nut. Of this last species, which has been cultivated for centuries, there are many named varieties: aùrea, yellow leaves; laciniàta, deeply cut leaves; péndula, weeping; etc. The other

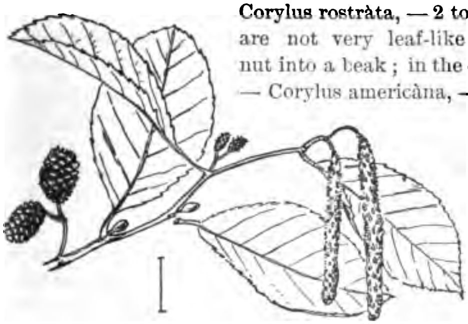

Fig. 557. — Seaside Alder.

species of filberts are so rare in cultivation that none need be mentioned in this book except PURPLE-LEAVED FILBERT — Corylus máxima purpùrea, — which is cultivated for its deep purplish red leaves rather than for fruit. [Seeds; suckers.]

Quércus. The OAKS are nearly all tall trees and the few shrubby forms are practically never cultivated and so this book of ornamental shrubs needs no place for them. The acorn fruit is distinctive and separates oaks from all other plants.

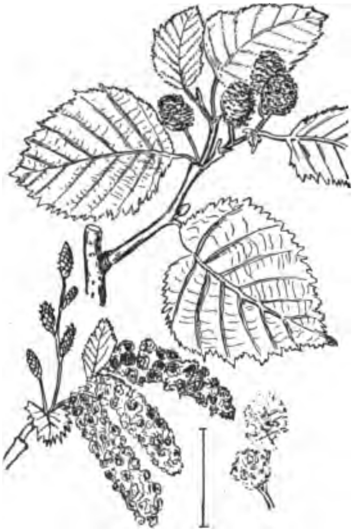

FIG. 558. — Green Alder.

BEAR OR BLACK SCRUB OAK (565) — Quercus ilicifòlia — is a spreading shrub 5 to 10 feet high with tangled branches and 3- to 7-lobed leaves, the lobes ending in bristles and the lower side covered with whitish hairs. CHINQUAPIN OAK — Quercus prinoìdes — is rarely over 8 feet high with wavy-edged leaves having 4 to 8 blunt teeth on each side. [Acorns.]

Castànea. This genus includes the CHESTNUT trees and the CHINQUAPIN shrubs and may be known by the alternate simple straight-veined leaves and the large spiny-coated fruit with more or less rounded nuts. CHINQUAPIN (566) — Castanea pùmila — is a handsome shrub or tree 6 to 50 feet high with a single (rarely 2) nut, ½ inch, in a prickly bur. The leaves are whitish-downy below. JAPAN CHESTNUT (567) — Castanea crenàta — is a hardy shrub or tree to 30 feet which begins to bear chestnuts when only a few years old and but a few feet high; the leaves are smooth below when mature. [Seeds.]

Sàlix. The WILLOWS form a large genus, nearly 200 species, of hardy shrubs and trees abundant in all cold countries. A number of trees are in cultivation and many of those which are only shrubby are considered worthy of ornamental use. There is no genus of plants more difficult to separate into species than the willows. All are diœcious, meaning that the pollen-bearing catkins are on one plant, the seed-forming catkins on another, and thus many hybrids are found.

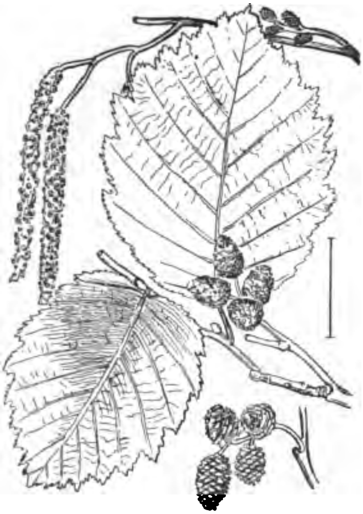
FIG. 559. — Speckled Alder.

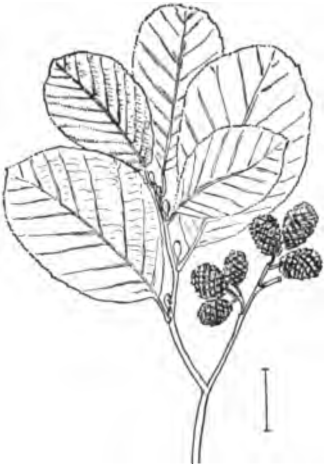
FIG. 560. — Smooth Alder.

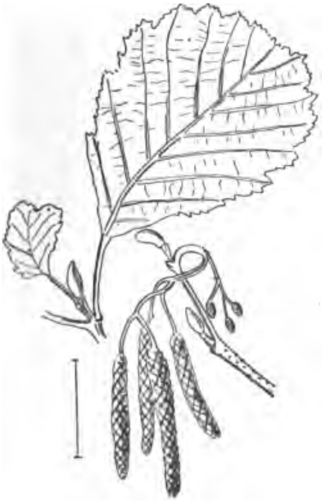
FIG. 561. — European Black Alder.

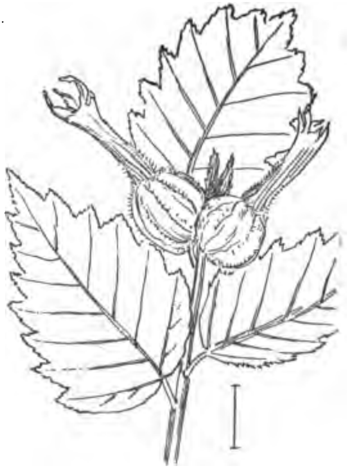
FIG. 562. — Beaked Hazelnut.

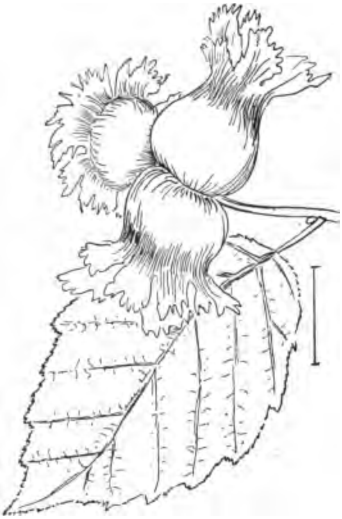

FIG. 563. — Hazelnut.

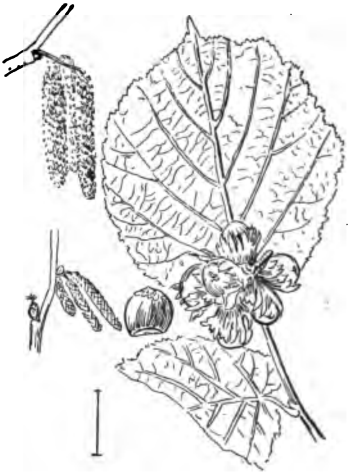

FIG. 564. — European Filbert.

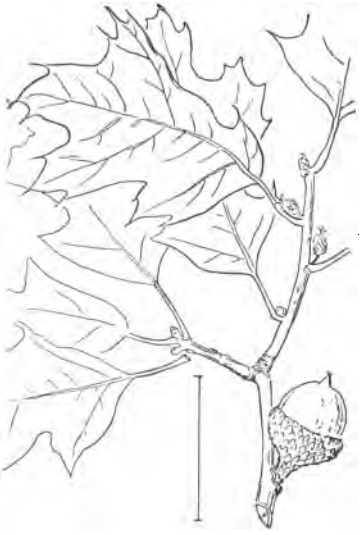

FIG. 565. — Bear Oak.

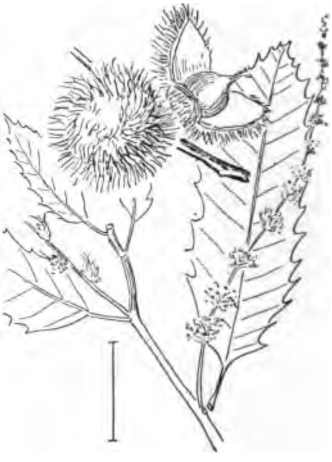

FIG. 566. — Chinquapin.

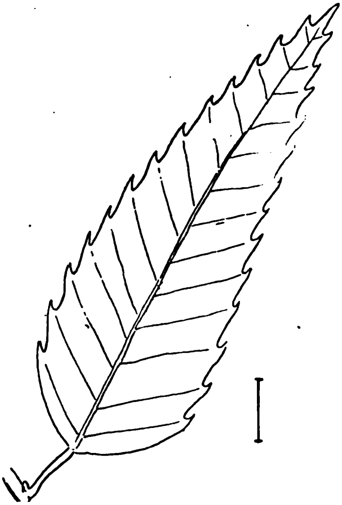

FIG. 567. — Japan Chestnut.

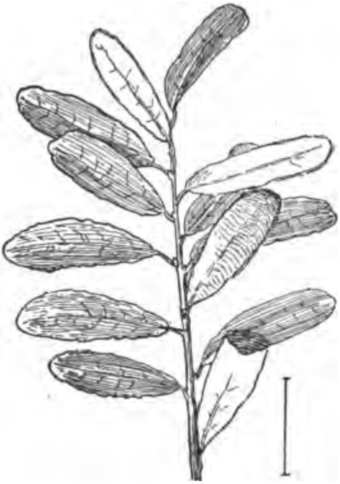

FIG. 568. — Dwarf Gray Willow.

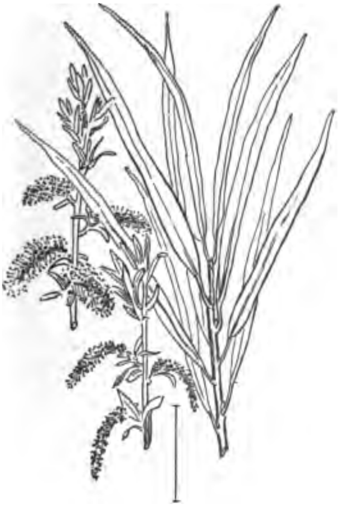

FIG. 569. — Rosemary Willow.

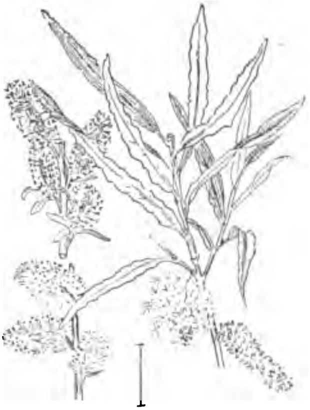

FIG. 570. — Osier Willow.

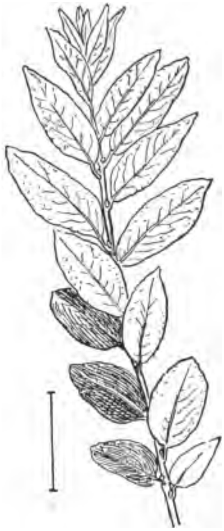

FIG. 571. — Bog Willow.

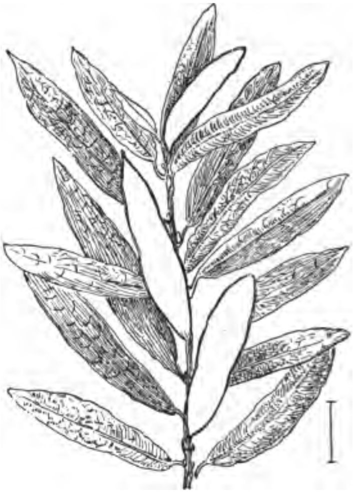

FIG. 572. — Hoary Willow.

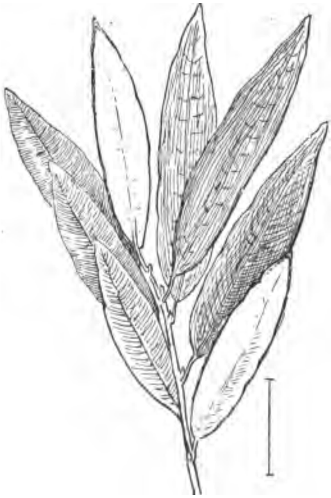

FIG. 573. — Prairie Willow.

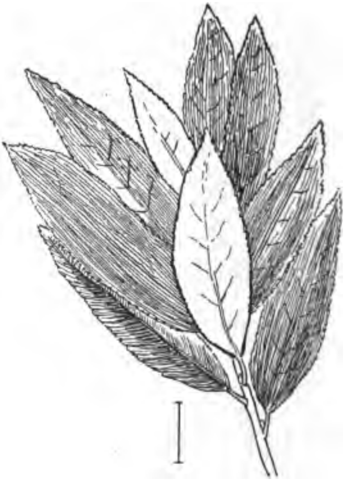

FIG. 574. — Broad-leaved Willow.

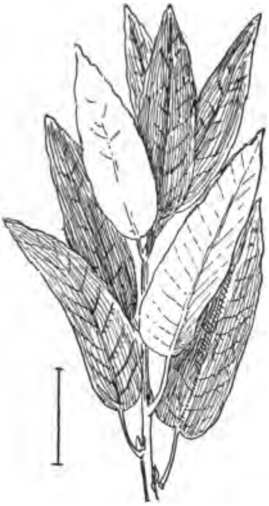

FIG. 575.—Balsam Willow.

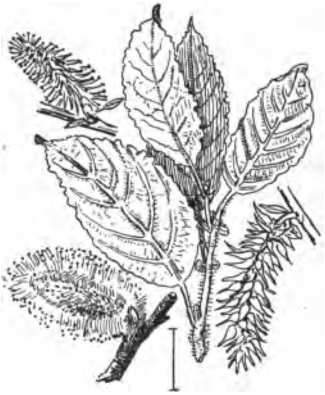

FIG. 576.—Goat Willow.

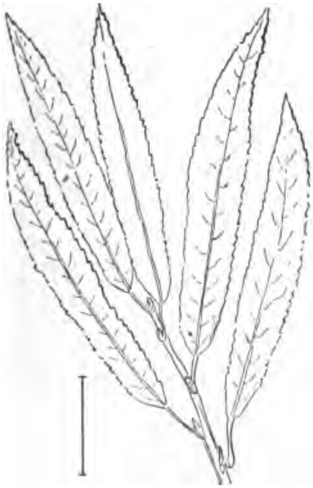

FIG. 577.—Slender Willow.

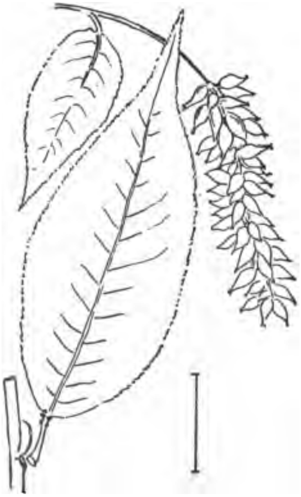

FIG. 578.—Shining Willow.

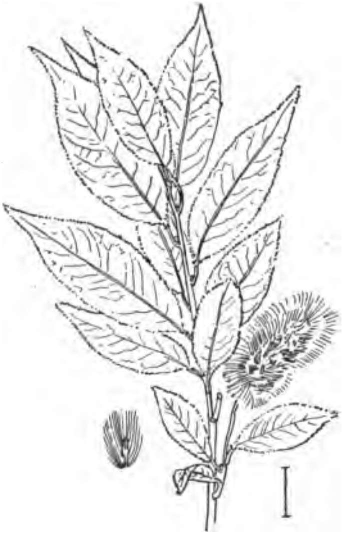

FIG. 579.—Laurel-leaved Willow.

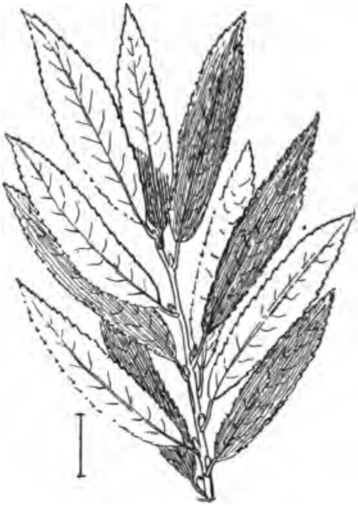

FIG. 580.—Silky Willow.

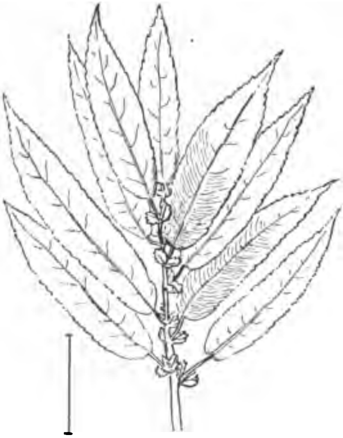

FIG. 581.—Heart-leaved Willow.

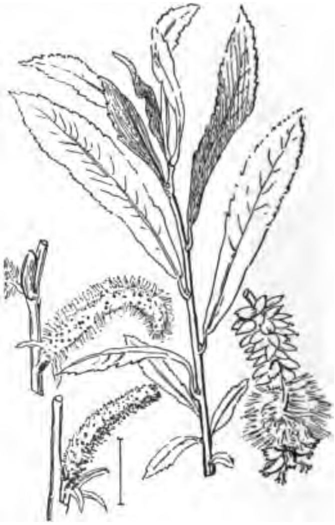

FIG. 582.—Purple Willow.

They are so easily raised from slips placed in the ground that they are, in cultivation, raised only that way. So, any sport or variety found anywhere is introduced into cultivation and perpetuated without the origin being known. The soft wood, alternate simple leaves, and flowers of both sorts, always in catkins in spring or summer, are enough to enable any one to separate willows from all other plants.

KEY TO COMMON SHRUBBY WILLOWS, BASED ON LEAF PECULIARITIES

* Leaves about entire-edged and more or less conspicuously whitened below. (**A.**)

A. Leaves under ½ inch wide. (**B.**)

B. Leaves under 2 inches long and almost sessile. DWARF GRAY WILLOW (568) — Salix trístis.

B. Leaves 2-5 inches long. One of the willows used to graft on goat willow stock to produce an umbrella tree. ROSEMARY WILLOW (569) — Salix incàna.

B. Leaves 4–10 inches long and beautifully silvery. One of the willows used in basket work. OSIER WILLOW (570) — Salix viminàlis.

A. Leaves ½–¾ inch wide and more or less rolled at the edges. (**C.**)

C. Leaves rarely over 2 inches long; twigs slender, smooth, pale brown. A low willow 1–3 feet high growing in bogs. BOG WILLOW (571) — Salix myrtilloides.

C. Leaves 2–4 inches long; twigs and leaves, when young, densely covered with white woolly substance. Like the last, a low willow 2–5 feet high, in wet bogs. SAGE WILLOW or HOARY WILLOW (572) — Salix cándida.

C. Leaves 2–4 inches long, grayish and peculiarly veined. A willow 3-8 feet high growing in dry soil. PRAIRIE WILLOW (573) — Salix hùmilis.

A. Leaves ¾–1½ inches wide. GLAUCOUS WILLOW — Salix díscolor. (Placed here as it sometimes has entire-edged leaves, though usually with notched ones.)

* Leaves notched at the edges. (**D.**)

D. Leaves conspicuously of two colors, decidedly whitened below. (**E.**)

E. Leaves frequently 2 inches wide, shining dark green above, glàucous below; twigs light gray. A willow 2–6 feet high, abundant on the sands of the shores of the Great Lakes. BROAD-LEAVED WILLOW (574) — Salix glaucophýlla.

E. Leaves 1-1½ inches wide, bright but not glossy green above, white below; buds very large and nearly black; shrub or tree to 25 feet. Glaucous Willow — Salix díscolor.

E. Leaves 1-1½ inches wide, smooth dark green above, whitened and very net-veined below. A willow, 4-10 feet high, of the North (Labrador, etc.). Balsam Willow (575) — Salix balsamífera.

E. Leaves 1-3 inches wide, rough above, thickish and with stout stems ¼-½ inch long. A plant often used as stock upon which to graft other willows to make such weeping trees as the Kilmarnock willows. Goat Willow (576) — Salix Cáprea.

E. Leaves less than an inch wide, dark green above and glaucous below, leaf-stems nearly ½ inch long. A slender-growing plant 5-12 feet high found in the swamps of the North and West. Slender Willow (577) — Salix petiolàris.

D. Leaves, though lighter below, are green on both sides. (**F.**)

F. Leaves glossy green on both sides, fragrant when bruised, usually over 1 inch wide, leaf-stalk with conspicuous glands. These two are among the finest willows in cultivation and grow from 8-20 feet high. (**G.**)

G. Catkins large and conspicuous appearing with the leaves. Shining Willow (578) — Salix lùcida.

G. Catkins rather small and appearing after many of the leaves are fully grown. Bay-leaved or Laurel-leaved Willow (579) — Salix pentándra.

F. Leaves rough above, soft with hairs below, 1-3 inches wide, blunt at tip. A willow often used for stock for grafting, 12-25 feet high. Goat Willow (576) — Salix Cáprea.

F. Leaves smooth, silky and dark green above at least when young, ½-¾ inch wide; shrub or tree 5-12 feet high growing along streams. Silky Willow (580) — Salix serícea.

F. Leaves under ½ inch wide; plants generally 5-15 feet high. (**H.**)

H. Leaves 2-3 inches long, about ¼ as wide, sometimes heart-shaped at base; stipules large and usually persistent. A very variable small willow of the watercourses, spreading at base into long flexible branches. Heart-leaved Willow (581) — Salix cordàta.

H. Leaves 3-6 inches long and about ⅙ as wide, often appearing opposite. Plant spreading at base with long flexible branches, so sometimes used as a basket willow. There is a variety, péndula, with drooping branches. Purple Willow (582) — Salix purpùrea.

H. Leaves 2-6 inches long and very narrow, usually less than

$\frac{1}{10}$ as wide as long, midrib yellow. A willow with slender erect branches forming broad thickets on sand bars in the streams. SAND BAR WILLOW — Salix longifolia (S. fluviátilis). [Twig cuttings.]

Rúscus aculeàtus. The BUTCHER'S BROOM (583) is a peculiar evergreen shrub, 1 to 4 feet, with alternate sessile ovate leaves ½ to 1½ inches long; these are not true leaves but flat leaf-like branches ending in sharp points and having on their lower sides the small flowers in spring and the red berries (½ inch thick) later in the season. It is hardy only in the extreme South. [Suckers.]

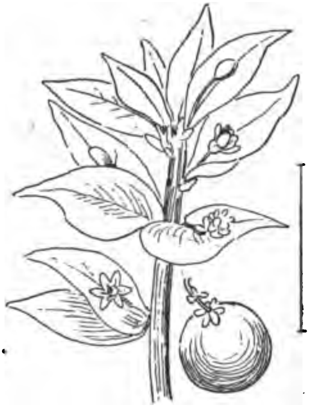

FIG. 583. — Butcher's Broom.

Coniferous Evergreens. The shrubby plants with narrow-linear, needle-shaped, and scale-shaped leaves are still to be described. They include PINES, SPRUCES, ARBORVITÆ, JUNIPERS, etc. These ornamental shrubs are included in key 9, small-leaved plants, but for convenience the following key is devoted to the Pine family alone. In this family there are no compound leaves; each green scale or needle-shaped part is a whole leaf.

KEY TO GENERA WITH DWARF FORMS BELONGING TO THE PINE FAMILY

* Leaves elongated four or more times as long as wide and spreading away from the twigs. (**A.**)

A. Leaves not flattened but rather needle-like so that they can be rolled between thumb and finger. (**B.**)

B. Leaves in clusters or bundles of 2–3–5 surrounded at base by a sheath. Pinus.

B. Leaves separated from each other, spirally arranged and attached to short brownish projections on grooved twigs. Picea.

A. Leaves decidedly flat and linear in shape. (**C.**)

C. Leaves with distinct more or less greenish stems spirally fastened to the twigs, usually so twisted as to spread out flat from the twigs. (**D**.)

- **D**. Leaves blunt or rounded at tips and whitened below. Tsùga.
- **D**. Leaves sharp or acute at tips and green below. Táxus.

C. Leaves without stems and opposite or whorled on the twigs. (**E**.)

- **E**. Leaves with 1 or 2 silvery lines on the upper side; fruit berry-like. Juníperus.
- **E**. Leaves with no silvery lines above, but sometimes below. (**F**.)
  - **F**. Fruit elongated cones with lapping scales (½–1 inch long). Thùja.
  - **F**. Fruit rounded cones with scales widening at ends and touching edge to edge. Chamæcýparis.

* Leaves scale-like and so pressed to the twigs as to cover them. (These plants often have flat linear spreading leaves as well, especially on young growths.) (**G**.)

- **G**. Branchlets flattened out like a fan; fruit a dry cone of 6–12 scales. (**H**.)
  - **H**. Cone elongated with lapping scales. Thùja.
  - **H**. Cone nearly globular with the scales widening at tips and touching edge to edge; seeds 2 under the scales. Chamæcýparis.
- **G**. Branchlets not flattened like a fan but extending irregularly in all directions. (**I**.)
  - **I**. The linear leaves with silvery lines on the upper side; fruit a berry bluish or brownish when ripe, often covered with a glaucous bloom. Juníperus.
  - **I**. The leaves, if elongated and spreading enough to show, will be found without silvery lines on the upper side; fruit a globular cone with the scales widening at tip and touching edge to edge, seeds many under the scales. (These trees probably have no ornamental dwarf forms, and so are omitted.) Cupréssus.

It is well to remind the reader here that new forms of the entire Pine family are constantly appearing, and that those mentioned below are merely suggestive of the variation of forms.

Pinus. The PINES are in almost all cases tall trees with an elongated central trunk. The evergreen leaves are needle-shaped and clustered in bundles of 2 to 5 with an inclosing sheath at their base. The fruit is a woody cone with 2-winged seeds above each scale.

There is one variety of the SWISS MOUNTAIN PINE — Pinus montàna, —

Mugho Pine (584) — Pinus montàna Mùghus, — which is always a low spreading shrub with crooked gnarled stems and branches. The rigid leaves are in twos, 1 to 3 inches long, inclosed in a much wrinkled sheath ½ inch long. The cones are ovoid, 1 to 2 inches long, nearly terminal to the branches. This mountain pine grows to the height of 2 to 5 (rarely 10) feet, but spreads so as to be broader than high. It is an excellent plant for the lawn.

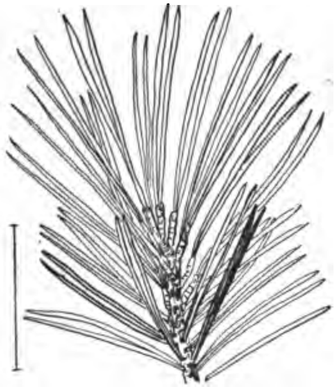
Fig. 584. — Mugho Pine.

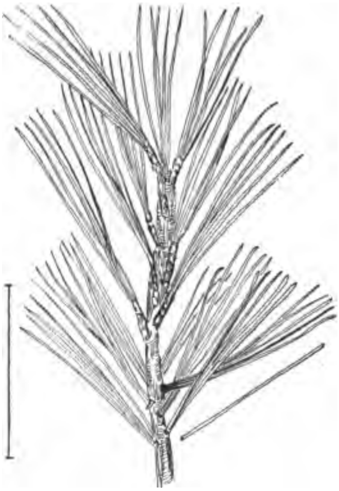
Fig. 585. — Dwarf White Pine.

Besides this pine with stiff leaves two together in a cluster, there are a few dwarf forms of the **White Pine** — Pinus Stròbus — with rather soft leaves five together in elongated sheaths. The finest of these is probably **Dwarf White Pine** (585), var. brevifòlia, also called nàna. It is a dwarf cushion-shaped little bush rarely over 4 feet high but spreading out in a broad flat compact tuft of glossy green spray. This is splendid for the lawn.

[Seeds; twig cuttings.]

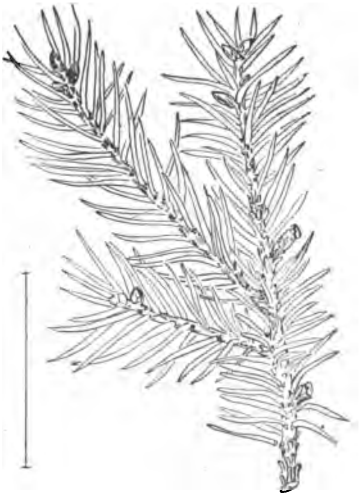
Fig. 586. — Gregory's Dwarf Spruce.

Picea. The SPRUCES are in the main tall tree-like evergreens with needle-like 4-angled leaves usually ½ to 1½ inches long, attached to a grooved twig on brownish projections. The readiness with which the leaves fall from the severed twigs and the roughness of the twigs, due to these projecting points, are the best distinctions for separating spruces from other cone-bearing plants. The commonest species in cultivation in this country is the NORWAY SPRUCE—Picea Àbies (P. excélsa),—and of the many varieties sold there are several that grow more like a shrub than a tree. Among these varieties are: GREGORY'S DWARF SPRUCE (586)—Gregoryàna,—seldom more than 1 to 2 feet high with numerous small, spreading branches densely clothed with short stiff spreading leaves; SMALL NORWAY SPRUCE—pùmila,—a dwarf with a more cònic form and with glaucous leaves spreading in all directions from the branches; PIGMY SPRUCE—pýgmæa,—with leaves very small, close set and sharp-pointed; and LORD CLANBRASIL'S SPRUCE—Clanbrasiliàna,—a dense globose or rounded shrub seldom 5 feet high, all parts much shortened and close set. [Seeds; twig cuttings; layers.]

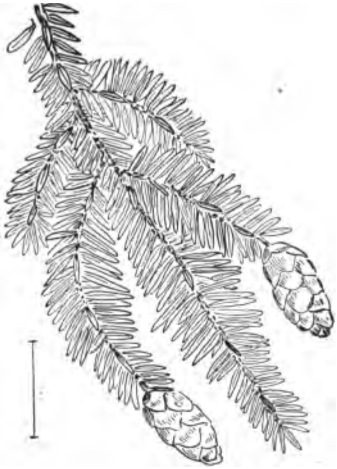

FIG. 587.—Sargent's Weeping Hemlock.

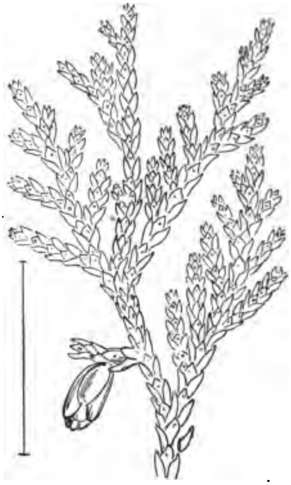

FIG. 588.—Hovey's Arborvitæ.

Tsùga. The HEMLOCKS are generally trees with short, ½ inch, flat, blunt leaves having two silvery lines on the lower side. These leaves are so twisted on the twigs as to extend in two directions from them, giving

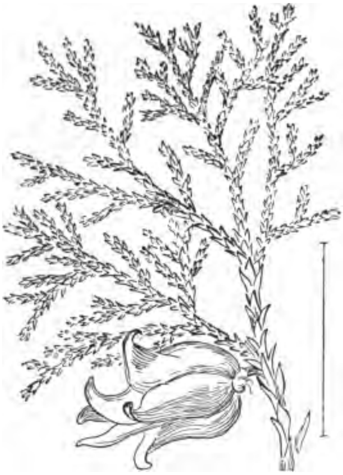

FIG. 589.—Golden Dwarf Arborvitæ.

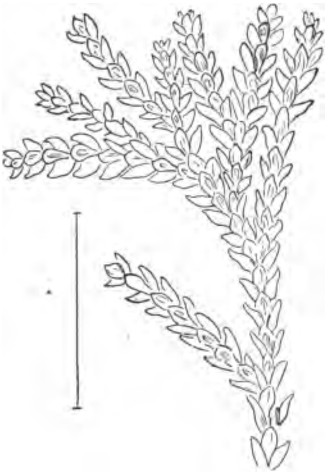

FIG. 590.—Dwarf Dolabrata Arborvitæ.

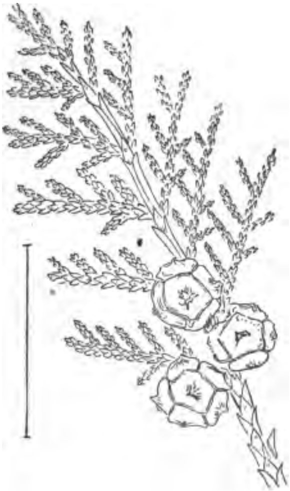

FIG. 591.—Lawson's Cypress.

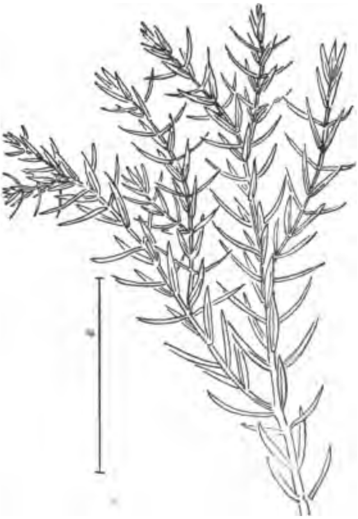

FIG. 592.—Heath-leaved Arborvitæ.

an arrangement that is called 2-ranked. The cones are short, under 1 inch, pendulous with smooth scales, found at the tips of the branches. Of the COMMON HEMLOCK—Tsuga canadénsis,—SARGENT'S WEEPING HEMLOCK (587)—var. Sargentiàna, or Sárgenti péndula—rarely grows over 3 feet high and has short drooping branchlets forming a dense flat-topped mass of foliage; DWARF HEMLOCK—nàna—is a dwarf with spreading branches and short branchlets forming a depressed shrub under 3 feet high. There is also a variety nàna of the JAPANESE HEMLOCK, Tsùga Sièboldi. The latter can be separated from the common American one by a close examination of the leaves with a lens; the edge of the American is somewhat notched, while the Japanese is entire. [Seeds; twig cuttings; grafting.]

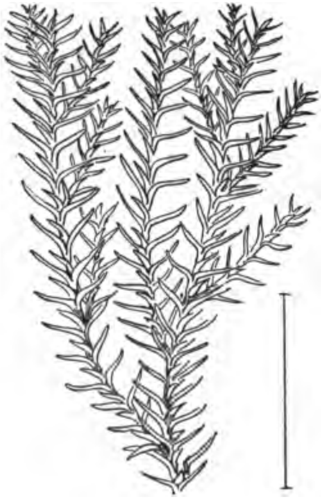
FIG. 593.—Juniper-leaved Arborvitæ.

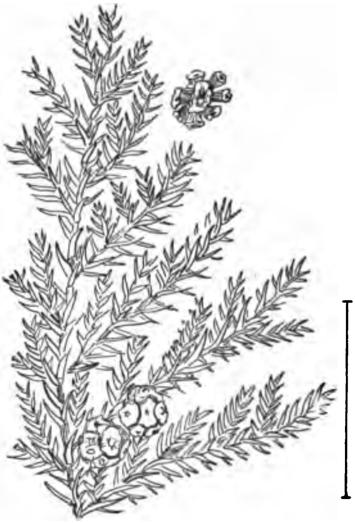
FIG. 594.—Silver Retinospora.

Thùja and Chamæcýparis. The Arborvitæ group of evergreens are among the most difficult class of plants to classify. The greatest confusion of names both common and scientific occurs with reference to them in books and catalogues. They have two very distinct forms of leaves; these are properly called the "juvenile" and the "adult." All of this group have opposite sessile leaves; but the seedlings begin with linear spreading ones about a half inch long; these are the juvenile leaves; later these change to scale-shaped leaves, appressed to and completely covering the stems, the adult leaves. Some of the bushy forms, the only ones

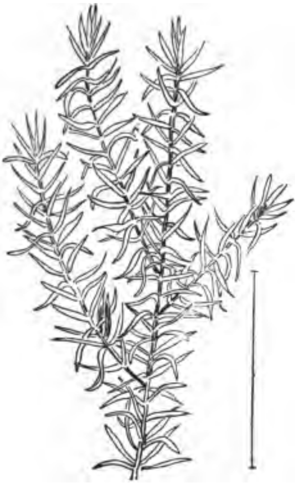

Fig. 595.—Juvenile Cypress.

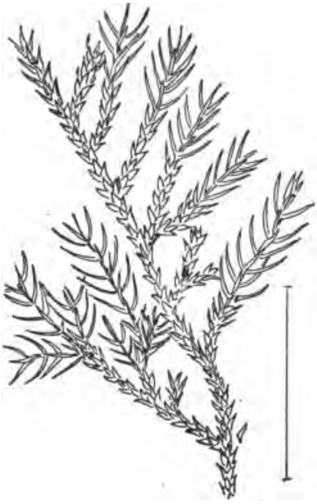

Fig. 596.—Tom Thumb.

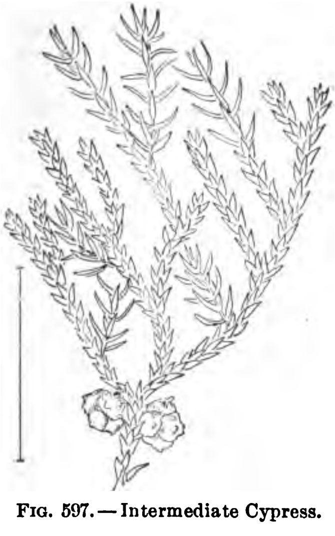

Fig. 597.—Intermediate Cypress.

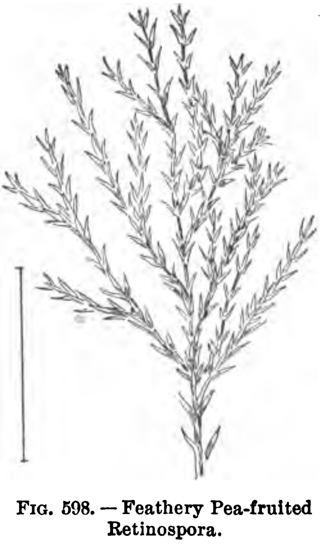

Fig. 598.—Feathery Pea-fruited Retinospora.

we have to consider, retain the juvenile form; others have both forms on different parts of the plants; while still others have only the scale leaves. The two genera above given can be surely separated only by an examination of the cones; and small plants rarely show these. The cones of Thuja are elongated with 8 to 12 lapping scales, and those of Chamæcyparis are nearly globular of 6 to 10 scales touching edge to edge. All these cones mature in one season and are small, always less than an inch and usually ¼ to ½ inch in diameter.

When the scale leaves appear, the branches on both genera so form as to produce flat fan-like growths. This plan of branching, called 2-ranked, separates the Arborvitæ from all the Junipers — Juniperus — and the true Cypresses — Cupressus.

These plants will be found in books and nursery catalogues under the names of Thùja, Thuyópsis, Biòta, Cupréssus, Chamæcýparis, and Retinóspora; but they will not all be spelled as here given. The first is often spelled Thùia and Thùya in modern books, and the last Retiníspora.

KEY — BASED ON THE CONES — FOR SEPARATING THE DWARF FORMS OF THUJA AND CHAMÆCYPARIS

* Cones elongated, with elongated lapping scales, Thùja. (**A.**)

- **A.** Cone scales thin, 8–10 in number; cones ½ inch long and somewhat pendulous. Common Arborvitæ (588) — Thuja occidentàlis.
- **A.** Cone scales 6–8, thickened, and having a horn-like process on each. Cones nearly erect, and about an inch long. Eastern or Chinese Arborvitæ (589) — Thuja orientàlis.
- **A.** Cone scales 8–10, thickened and reflexed, with 3–5 seeds under each; cones somewhat pendulous. Dwarf Dolabrata Arborvitæ (590) — Thuja (Thuyópsis) dolabràta.

* Cones globular, of 6–12 scales, which touch edge to edge. Chamæcýparis. (**B.**)

- **B.** Cones about ½ inch in diameter, of 8–10 brown scales. Hinoki Retinospora — Chamæcyparis obtùsa.
- **B.** Cones about ⅓ inch in diameter, of 10–12 brown scales. Sawara Retinospora — Chamæcyparis pisífera.
- **B.** Cones about ⅓ inch in diameter, of 8 reddish brown scales. Lawson's Cypress (591) — Chamæcyparis Lawsoniàna.
- **B.** Cones about ¼ inch in diameter, of 6 glaucous-green or purplish scales. White Cedar — Chamæcyparis thyoides (C. sphæroidea).

KEY — BASED MAINLY ON THE LEAVES — FOR THE DWARF VARIETIES OF THÙJA AND CHAMÆCÝPARIS

* Leaves about linear, and spreading well from the stems. (**A.**)

A. Leaves sharp-pointed and rather stiff, dull green above, and grayish below, changing to brownish in winter. (**B.**)

B. Bush globose or broadly pryamidal; leaves rather distantly arranged on slender branches. HEATH-LEAVED ARBORVITÆ (592) — Thuja occidentàlis ericoìdes.

B. Bush of several erect stems, and branches also erect; leaves not so distantly arranged. JUNIPER-LEAVED ARBORVITÆ (593) — Thuja orientàlis decussàta.

A. Leaves less sharp, soft rather than stiff, and with a somewhat silvery appearance; low tree, but sometimes shrub-like, with branches much divided. SILVER RETINOSPORA (594) — Chamæcyparis pisífera squarròsa.

A. Leaves as in the last, but more spreading; silvery only on lower side. JUVENILE CYPRESS (595) — Chamæcyparis thyoìdes ericoìdes.

* Leaves of two kinds on different branchlets, some linear and spreading, others scale-like; branches with scale leaves flattened, fan-form. (**C.**)

C. Low, compact, and broadly spreading, with somewhat silvery foliage. TOM THUMB (596) — Thuja occidentàlis Ellwangeriàna.

C. Similar to the last but of more erect growth, leaves bluish green. INTERMEDÌATE CYPRESS (597) — Chamæcyparis thyoìdes (C. sphaeróidea) Andelyénsis.

C. Similar (to first **C**), but the upper branchlets slender and sparingly divided. SPAETH'S ARBORVITÆ — Thuja occidentàlis Spaèthii.

C. Most leaves elongated and slightly spreading; conic bush with erect branchlets having a feathery appearance. FEATHERY PEA-FRUITED RETINOSPORA (598) — Chamæcyparis pisífera plumòsa.

* Leaves all shortened and scale-like; spray fan-like.

There are so many varieties in cultivation under this third * that it will probably be better to give them under the names of the species, allowing for the fuller descriptions.

HATCHET-LEAVED ARBORVITÆ — Thuja dolabràta — is one of the finest of the Japanese trees, and is especially good for lawn planting in single specimens. The common dwarf form, **Dwarf Dolabrata Arborvitæ** (590) — nàna — is a very light glossy green bush, with slender branchlets. There is a form of this with creamy tips to the branchlets, variegàta.

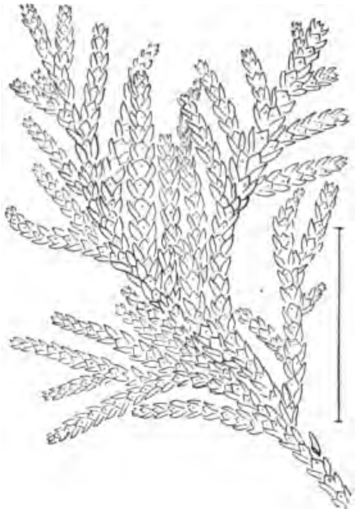

Fig. 599. — Globe Arborvitæ.

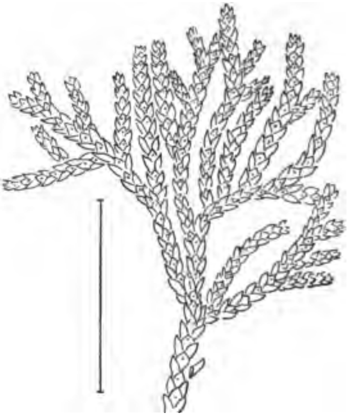

Fig. 600. — Little Gem Arborvitæ.

Common Arborvitæ — Thuja occidentàlis — has the largest number of dwarf forms; most of them have fan-shaped spray, many having colored, other than green, and variegated foliage. Only a few of the 30 or more can here be mentioned. One of the smallest, **Dwarf Arborvitæ** — dumòsa, — rarely grows over 3 feet high, and is a spreading, irregularly branching shrub, with crowded and tufted fan-shaped parts; **Globe Arborvitæ** (599) — globòsa — is a bright green somewhat open rounded shrub with slender branches; **Hovey's Arborvitæ** — Hóveyi — is similar to the last but more dense and ovate in shape; **Little Gem Arborvitæ** (600) is a spreading dark green very dwarf shrub, broader than high; **Baby-yellow Arborvitæ** — lùtea nàna — is a dwarf compact bush with golden foliage.

Eastern or Chinese Arborvitæ — Thuja orientàlis — also has a number of dwarf forms with light green, dark green, and colored foliage, having fan-shaped spray: **Golden Dwarf Arborvitæ** (601) — aùrea nàna — is very dwarf and compact, with golden foliage; **Ever-golden Arborvitæ** — semperaurèscens — is more globose, and the yellow color lasts throughout the year; THREAD-BRANCHED ARBORVITÆ — filifórmis strícta — is a round-headed dwarf bush with upright slender, almost thread-like, branches; WHIPCORD WEEPING ARBORVITÆ (602) — péndula — is a weeping bush with tufted cord-like branchlets; JUNIPER-LEAVED ARBORVITÆ — decussàta — is a bright bluish green low compact rounded form, with linear spreading leaves, similar to Chamæcyparis squarròsa, very useful for window boxes.

The so-called 'JAPANESE RETINOSPORAS' furnish a number of dwarf forms with fan-like spray. They belong to HINOKI RETINOSPORA or CYPRESS — Chamæcyparis obtùsa — and SAWARA or PEA-FRUITED RETINOSPORA — Chamæcyparis pisífera; the latter with the smaller cones, pea-like, as is indicated by the specific name. These, as well as the Thujas, have forms with golden and silvery foliage. Both the species occasionally grow in their native country to the height of 100 feet or more. The smallest of the varieties of Chamæcyparis obtùsa, PIGMY HINOKI RETINOSPORA (603) — pygmæa, — has almost creeping branches, rarely reaching a foot in height, and is very useful for rockeries; DWARF HINOKI RETINOSPORA — nàna — is a low form with short deep green branchlets; CLUB MOSS-LEAVED HINOKI RETINOSPORA — lycopodioìdes — is low with spreading rigid branches having 4-sided branchlets; FERN-LIKE HINOKI

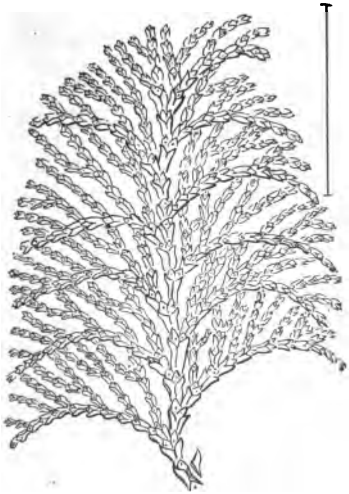

FIG. 601. — Golden Dwarf Arborvitæ.

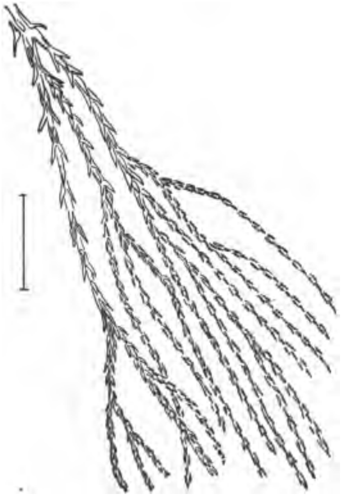

FIG. 602. — Whip-cord Weeping Arborvitæ.

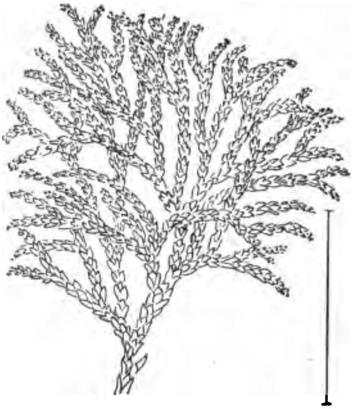

FIG. 603.—Pigmy Hinoki Retinospora.

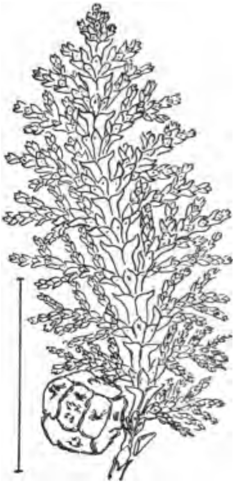

FIG. 604.—Fern-like Hinoki Retinospora.

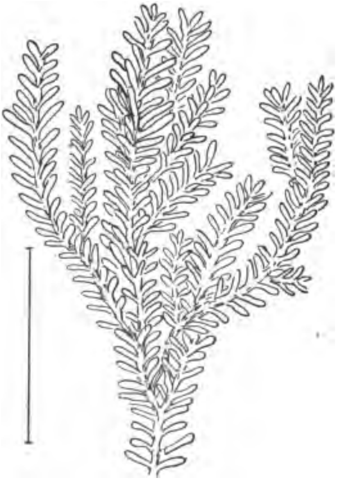

FIG. 605.—Sander's Retinospora.

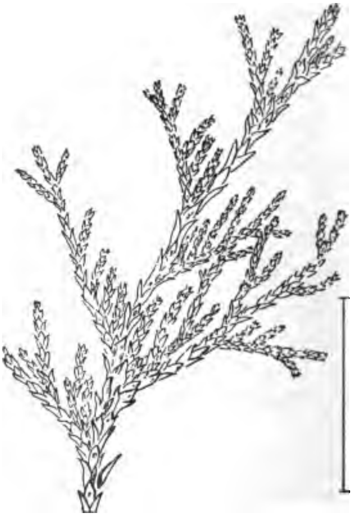

FIG. 606.—Thread-branched Pea-fruited Retinospora.

Retinospora (604) — filicoìdes — is of slow growth, with dense, fern-like branchlets. The most peculiar of all the Hinoki Cypresses is Sander's Retinospora (605) — ericoìdes; it is a small dense shrub with blunt stiff spreading leaves forming four rows on the stems; in color it is the brightest bluish green of any of the coniferous plants.

Chamæcyparis pisífera has but few dwarf forms with fan-shaped spray; the tendency is more apt to be toward linear spreading leaves. Thread-branched Retinospora (606) — filífera — has peculiar elongated thread-like growth of twigs with distant sharp-pointed leaves; a low tree or subprostrate shrub; of this there is a glaucous-leaved form, glaùca.

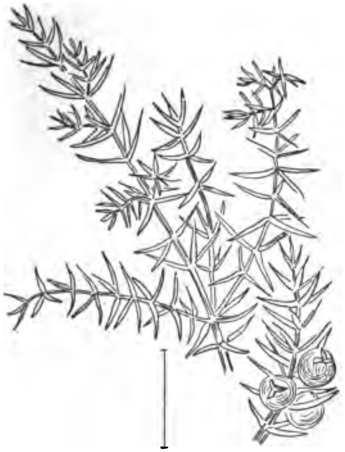

Fig. 607. — Common Juniper.

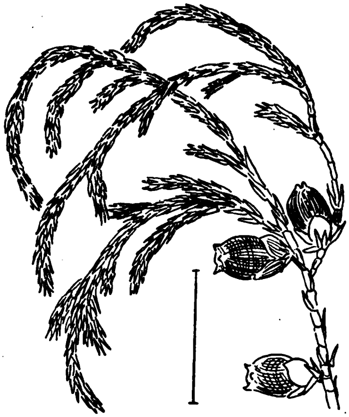

Fig. 608. — Curved-branched Juniper.

The varieties of Pea-fruited Retinosporas with longer and more spreading leaves are among the most popular and beautiful of the evergreens of Japan. Feathery Pea-fruited Retinospora — Chamæcyparis pisífera plumòsa — has awl-shaped spreading leaves dark green in color and is often called Green Retinospora. The colored forms of this are: Speckled Retinospora — plumòsa albo-pícta, — with the tips of the branchlets cream-white; Creamy Retinospora — plumòsa argéntea, — with the whole of the young spray cream-white, becoming green the following season; and Golden Retinospora — plumòsa aùrea, — with all the terminal shoots light golden yellow in the spring and changing to a deep green later. Besides the Feathery Retinosporas, there is a variety with linear leaves in pairs spreading squarely from the stems, of almost a silvery color, Silver Retinospora — Chamæcyparis pisífera squarròsa.

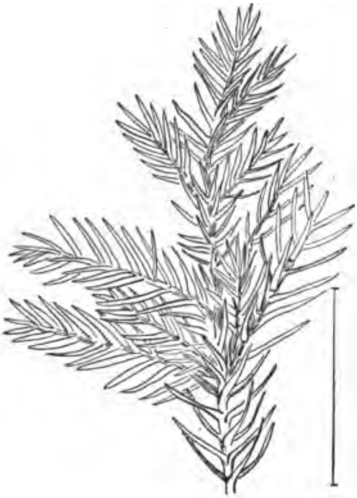

FIG. 609. — Chinese Juniper.

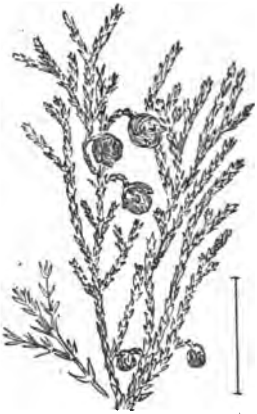

FIG. 610. — Shrubby Juniper.

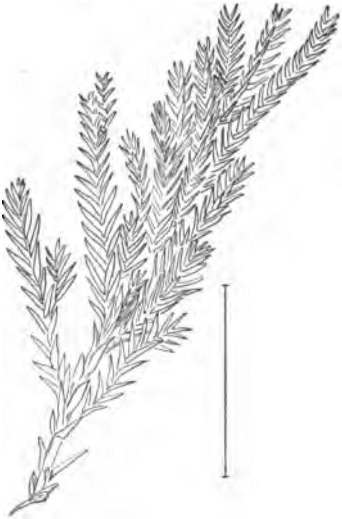

FIG. 611. — Waukegan Juniper.

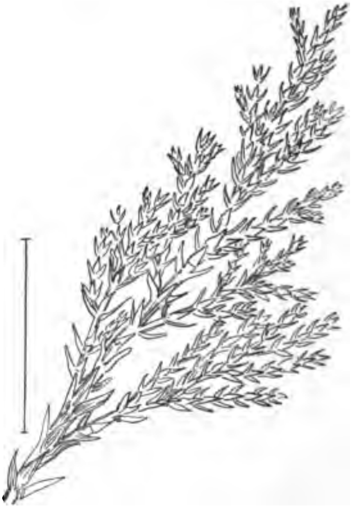

FIG. 612. — Tamarisk-leaved Juniper.

This is a tree or a large shrub of irregular outline, and is in its leaf form and arrangement so like some of the Thujas as to lead to much confusion of names in nurseries. [Seeds; twig cuttings; grafting.]

Junípero. The Junipers are trees or shrubs with evergreen sessile opposite or whorled leaves. These are either linear, flattened, sharp-pointed and spreading or small scale-like and pressed to the twigs which they cover. In these respects they are much like the genera Thuja and Chamæcyparis. The junipers have berry fruits instead of cones, but as the junipers are quite generally diœcious, therefore usually found without fruit, there must be some other method for separating them. When there are present the elongated leaves, the junipers show one or two silvery lines on the upper side. This fact will separate them also from the genus Cupressus, which may have silvery lines but always on the lower side. The junipers, when with scale leaves, never so branch as to form fan-shaped growths, as do the Thuja and the Chamæcyparis bushes, but the branching extends irregularly in all directions.

KEY TO THE JUNIPERS

* Plants with only the spreading, linear, stiff, sharp-pointed leaves generally arranged in 3's around the stem, though sometimes opposite. (**A.**)

- **A.** Leaves with one silvery line on the upper, concave side; fruit globular, ⅓ inch wide. (**B.**)
  - **B.** Leaves broadly spreading; fruit axillary, almost sessile, dark glaucous-blue, ripening the third year, 3-seeded. COMMON JUNIPER (607) — Juniperus commùnis.
  - **B.** Leaves only slightly spreading; fruit oblong, terminal, 1-seeded; not hardy North. CURVED-BRANCHED JUNIPER (608) — Juniperus recúrva.
- **A.** Leaves with two silvery lines on the upper side; fruit globular, usually 3-seeded and dark brown; shrub to 12 feet, not hardy North and probably not cultivated South. (**C.**)
  - **C.** Fruit nearly ½ inch and glaucous. LARGE-FRUITED JUNIPER — Juniperus macrocárpa.
  - **C.** Fruit less than ½ inch, shining and but slightly glaucous. PRICKLY JUNIPER — Juniperus Oxycèdrus.

* Plants with both the linear spreading leaves and the scale ones scattered on different parts of the bush. (**D.**)

- **D.** Fruit globular, shining reddish brown, 3–6-seeded; leaves minutely notched at edges. PHŒNICIAN JUNIPER — Juniperus phœnícea.

D. Fruit globular, glaucous brownish-violet with 2–3 seeds; the scale leaves without notches and blunt at tip. CHINESE JUNIPER (609) — Juniperus chinénsis.

D. Fruit small, glaucous, brownish, 1–2-seeded on short straight stems ripening the first year; leaves very small and sharp-pointed. VIRGINIAN JUNIPER or RED CEDAR — Juniperus virginiàna.

D. Fruit larger, light blue, pendulous, borne on curved stems, 1–4-seeded, ripening the second year; low spreading shrubs with strong disagreeable odor when bruised. SAVIN or SHRUBBY RED CEDAR or JUNIPER (610) or WAUKEGAN JUNIPER (611) or TAMARISK-LEAVED JUNIPER (612) — Juniperus Sabìna.

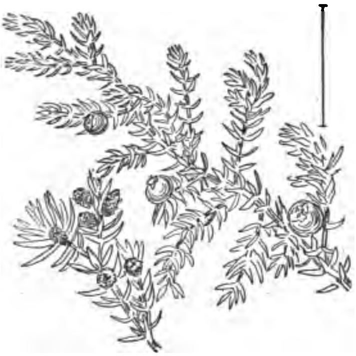
FIG. 613. — Prostrate Juniper.

Of the above species, commùnis, chinénsis, virginiàna, and Sabìna have most of the dwarf varieties. With the fruit there will be but little difficulty in correctly naming them, but without the fruit there will be much trouble. Sabìna can be readily separated by its odor from virginiàna, which it most resembles. Below are given most of the varieties that are shrubby.

CURVED-BRANCHED JUNIPER (608) — Juniperus recúrva — is a shrub or tree to 30 feet. It has dwarf varieties of which the lowest one, PROSTRATE JUNIPER (613) — squamàta, — has prostrate or trailing branches, leaves straight and slightly spreading, of a glaucous bluish green color; DENSE-BRANCHED JUNIPER — dénsa — has short crowded branchlets and curved grayish green leaves.

COMMON JUNIPER (607) — Juniperus commùnis — in its tree form ranges from 20 to 30 feet but is often a shrub of 4 to 5 feet; ROUNDED JUNIPER — hemisphærica — is, as its name indicates, a rounded shrub with many

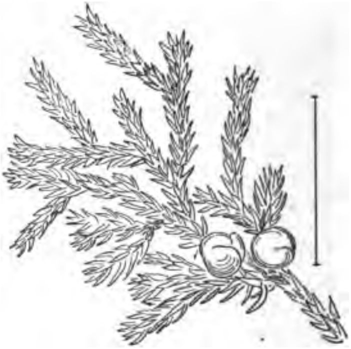
FIG. 614. — Spreading Juniper.

branches and crowded branchlets, the leaves whitish above and distinctly ridged below; **Spreading Juniper** (614) — nàna — is an almost prostrate shrub with thickish much-divided branchlets sometimes forming circular patches 10 feet in diameter, the leaves short, incurved, almost covering the stems, often considered a separate species — Juniperus nàna; **Douglas' Golden Juniper** (615) — canadénsis aùrea — is similar to var. nàna, but more erect and the leaves longer and narrower, with tips of branchlets golden yellow; **Oblong Juniper** — oblónga — is a large shrub or small tree with slender somewhat pendulous branches having longer and more spreading bright green leaves; **Weeping Common Juniper** — péndula — is a lower bush with still more pendulous branchlets.

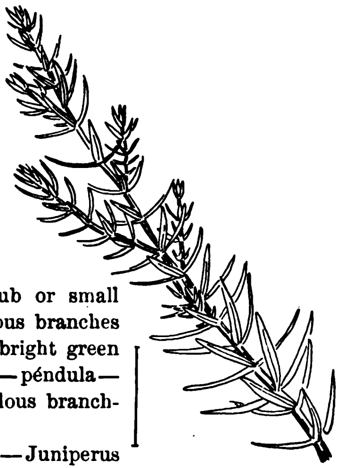

Fig. 615. — Douglas' Golden Juniper.

Virginian Juniper or Red Cedar — Juniperus virginiàna — is the tallest of the junipers, sometimes reaching the height of 100 feet, but it has a number of dwarf varieties of which **Dwarf Virginian Juniper** — dumòsa — is about the lowest, growing into a rounded or pyramidal bush, it has many close-set ascending branches with generally linear bright green leaves; **Weeping Virginian Juniper** — péndula — has weeping branchlets with many bright green scale leaves; **Creeping Virginian Juniper** — réptans — is bright green with horizontally spreading branches and more erect branchlets.

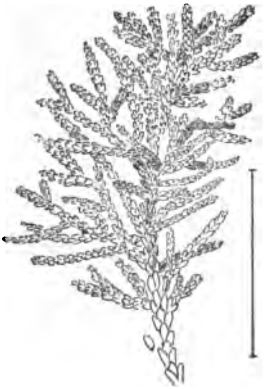

Fig. 616. — Golden Japan Juniper.

Savin Juniper (610) — Juniperus Sabìna — is, like the last, one of the native American species, but instead of growing tall is always a low shrub, rarely reaching the height of 10 feet. Almost all of the dwarf forms of Juniperus virginiana are duplicated in this species. The one test that will separate them is the very strong and, to many, disagreeable odor of the bruised leaves of Sabina. Among the named varieties are: **Procumbent Juniper** — hùmilis — a nearly prostrate shrub with numerous erect

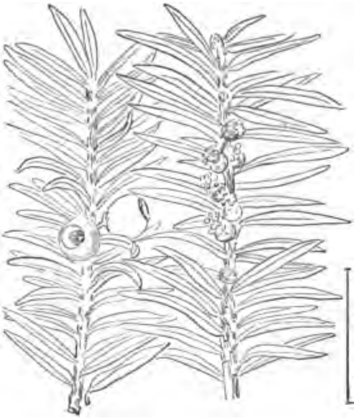

Fig. 617. — English Yew.

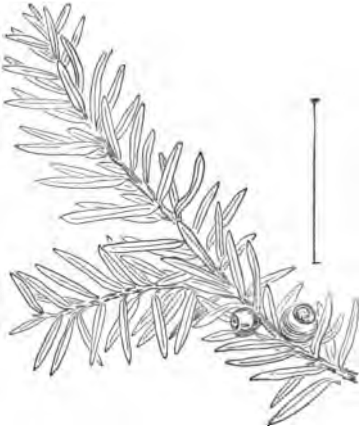

Fig. 618. — American Yew.

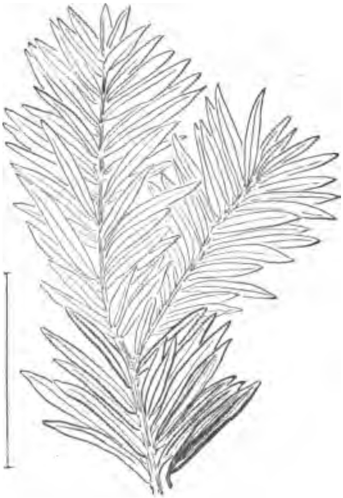

Fig. 619. — Golden Yew.

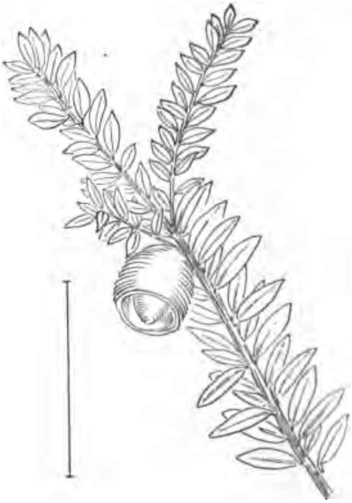

Fig. 620. — Short-leaved Yew.

branchlets and peculiarly bright, sharp-pointed leaves; Waukegan or Trailing Juniper (611)—J. horizontàlis (J.S. prostràta),—a procumbent, trailing or rarely ascending shrub, the long branches being much divided into short branchlets, the leaves bluish; Tamarisk-leaved Juniper (612) — tamariscifòlia — has more ascending branches with many linear slightly curved dark green leaves usually in 3's; Speckled Juniper —variegàta — is a dense dwarf with the tips of the youngest growths cream-white, which gives it a speckled appearance, the leaves are mostly scale-like.

Chinese Juniper — Juniperus chinénsis — is usually a tree to 50 feet but is often shrub-like, among which latter Golden Chinese Juniper (609) — aùrea — has the whole growth of the year a golden yellow, especially bright if growing in the sun, this changes to a green the second year; Procumbent Chinese Juniper — procúmbens — is often procumbent with elongated branches and short branchlets, in the young growths, the leaves are linear and spreading, but in the older parts scale-like. The dwarf golden evergreen — aùrea — is acutely pyramidal, and according to the nurserymen, more erect and vigorous than the so-called

Golden Japan Juniper (616) — Juniperus japónica (J. chinénsis) aùrea. These both retain their deep golden color even through the winter.

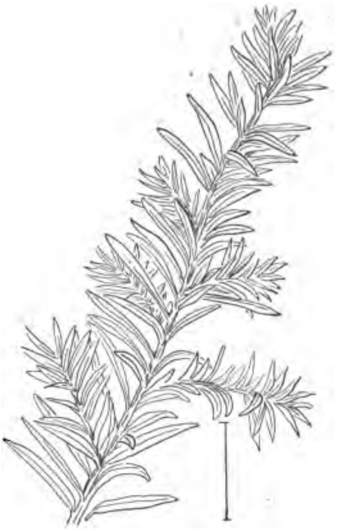

Fig. 621. — Spreading English Yew.

[Seeds, 2–3 years to germinate; twig cuttings under glass.]

Táxus. The Yews are desirable evergreens for park and cemetery planting, and are of slow growth. They are densely clothed with dark green linear leaves, and the pistillate plants are especially beautiful in the fall with their scarlet berry-like fruit. (Yellow-berried Yew — Taxus baccàta frúctu lùteo — has, as the name shows, yellow berries.) The leaves are linear and sharp-pointed, in shape and attachment much like the hemlocks, but the undersides of the leaves of the yews are a lighter though bright green, while the hemlock leaves are whitened by silvery lines.

The two species in cultivation with dwarf forms are the English Yew (617) — Taxus baccàta — and the American Yew or Ground Hemlock

(618) — Taxus canadénsis. The latter is the more hardy, doing well even in Canada, while the former needs protection in Massachusetts. T. baccàta is much the taller and tree-like, sometimes reaching the height of 60 feet, while T. canadensis is generally a prostrate shrub rarely reaching the height of 5 feet. The first is generally diœcious, while the last is rarely so, and therefore nearly all plants old enough will have berries. The leaves of T. canadensis are narrower, shorter, and of a more yellowish green, and its fruit ripens a month or two earlier than the European species.

The **English Yew** — Taxus baccàta — has many cultivated forms with variegated foliage or less erect growth, among which may be mentioned: **Silvery Yew** — argéntea, — with whitish-striped leaves; **Golden Yew** (619) — aùrea, — with golden-yellow-edged leaves; **Fisher's Yew** — Físheri, — with some of the leaves deep yellow throughout; **Jackson's Yew** — Jácksoni or péndula, — with weeping tips to the branches; **Short-leaved Yew** (620) — adpréssa, — with long spreading branches and short leaves ½ inch or less long; **Spreading English Yew** (621) — procúmbens, — prostrate.

GLOSSARY OF BOTANICAL TERMS

Abruptly pinnate. Pinnate without an odd leaflet at the end; even-pinnate.

Acuminate. Taper-pointed.

Acute. Terminating in a well-defined angle, usually less than a right angle.

Alternate. Not opposite each other; as the leaves of a stem when arranged one after the other along the branch.

Anther. The essential part of a stamen of a flower; the part which contains the pollen.

Axil. The upper angle between the leafstalk and the twig.

Axillary. Situated in the axil; as a bud, branch, or flower-cluster when in the axil of a leaf.

Berry. Used in this work to include any soft, juicy fruit with several (at least more than one) readily separated seeds buried in the mass.

Bipalmate. Palmately branched with the branches again palmated.

Bipinnate. Twice-pinnate.

Blade. The thin, spreading portion, as of a leaf.

Bract. A more or less modified leaf subtending a flower or fruit; usually a small leaf in the axil of which the separate flower of a cluster grows.

Capsule. A dry, pod-like fruit which has either more than one cell, or, if of one cell, not such a pod as that of the pea with the seeds fastened on one side on a single line.

Catkin. A scaly, usually slender and pendent cluster of flowers.

Ciliate. Fringed with hairs along its edge.

Cordate. Heart-shaped, the stem and point at opposite ends.

Corymb. A flat-topped or rounded flower-cluster; in a strict use it is applied only to such clusters when the central flower does not bloom first. See *cyme.*

Crenate. Edge notched with rounded teeth.

Cyme. A flat-topped flower-cluster, the central flower blooming first.

Deciduous. Falling off; said of leaves when they fall in autumn, and of floral leaves when they fall before the fruit forms.

Dentate. Edge notched, with the teeth angular and pointing outward.

Diœcious. With stamens and pistils on different plants.

Drupe. A fleshy fruit with a single bony stone. In this book applied to all fruits which, usually juicy, have a single seed, even if not bony, or a bony stone, even if the stone has several seeds.

Elliptical. Having the form of an elongated oval.

Emarginate. With a notched tip.

Entire. With an even edge; not notched.

Evergreen. Retaining the leaves (in a more or less green condition) through the winter and until new ones appear.

Exstipulate. Without stipules.

Feather-veined. With the veins of a leaf all springing from the sides of the midrib.

Filament. The stalk of a stamen; any thread-like body.

Head. A compact, rounded cluster of flowers or fruit.

Key. A fruit furnished with a wing, or leaf-like expansion.

Lance-shaped. Lanceolate. Like a lance-head in shape.

Legume. A pea-like pod.

Linear. Long and narrow, with the edges about parallel.

Lobe. The separate, projecting parts of an irregularly edged leaf if few in number.

Lobed. Having lobes along the margin.

Mucronate. Tipped with a short abrupt point.

Nerved. Parallel-veined, as the leaves of some trees.
Nut. A hard, unsplitting, usually one-seeded fruit.
Nutlet. A small nut.

Obcordate. Heart-shaped, with the stem at the pointed end.
Oblanceolate. Lanceolate, with the stem at the more pointed end.
Oblong. Two to four times as long as wide, with the sides somewhat parallel.
Obovate. A reversed ovate.
Odd-pinnate. Pinnate, with an end leaflet.
Opposite. With two leaves on opposite sides of a stem at a node.
Orbicular. Circular in outline.
Oval. Broadly elliptical.
Ovary. The part of the pistil of a flower containing the ovules or future seeds.
Ovules. The parts within the ovary which may form seeds.

Palmate. A leaf with the veins on the leaflets all starting from the end of the petiole.
Palmately veined. With three or more main ribs, or veins of a leaf, starting from the base.
Panicle. An open, much branched cluster of flowers or fruit.
Parallel-veined. With the veins of the leaf parallel; nerved.
Parted. Edge of a blade separated three fourths of the distance to the base or midrib.
Pedicel. The stem of each flower of a cluster.
Peduncle. The stem of a solitary flower, or the main stem of a cluster.
Petal. A leaf of the corolla of a flower.
Petiole. The stalk or stem of a leaf.
Petiolate. Said of a leaf which has a stalk.
Pinnæ. The first divisions of a bipinnate or tripinnate leaf.
Pinnate leaf. A compound leaf with the leaflets arranged along the sides of the stem.
Pistil. The central essential organ of a flower.
Pod. A dry dehiscent fruit like that of the pea.
Pollen. The dust or light powdery grains contained in the anther.
Polypetalous. Having a corolla of separate petals.
Pome. An apple-like fruit with the seeds in horny cells.

Raceme. A flower-cluster with one-flowered stems arranged along the peduncle.

Samara. A winged fruit; a key fruit.
Scape. A peduncle rising from the ground or from a subterranean stem.
Serrate. Having a notched edge, with the teeth pointing forward.
Sessile. Without stem.
Shrub. A bush-like plant; one branching from near the base.
Spike. An elongated cluster of flowers with the separate blossoms about sessile.
Stamen. One of the pollen-bearing or fertilizing parts of a flower.
Stigma. That part of a pistil which is fitted to receive the pollen.
Stipe. The stalk of a pistil.
Stipules. Small blades at the base of a leafstalk.
Suckers. Shoots from a subterranean part of a plant.

Tree. A plant with a woody trunk which does not branch near the ground.

Umbel. A cluster of flowers or fruit having stems of about equal length and starting from the same point.

Veinlets. The most minute framework of a leaf.
Veins. The smaller lines of the framework of a leaf.

Whorl. In a circle around the stem, as the leaves of a plant.

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